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THE DATE OF THE BHARATA WAR

(FROM ASTRONOMICAL DATA ONLY)

By Tarakeswar Bhattacharyya

Introduction

To students of ancient Indian history and particularly to those, who are keen about the exact date of the Bhārata war the great epic, the *Mahabharata* is a vast storehouse of valuable information.

The search, for the date of the Bharata war, presupposes the belief, that the war in question did really take place, and that the persons, who are said to have taken part in it, were really historical personages. So the statements, made by them regarding times and events, as recorded in the *Mahābhārata*, must be relied upon, for the purpose of historical investigation, with, of course, due caution and judgment.

There are many direct and straightforward statements in the *Mahābhārata*, without any scope for ambiguity. These may help us immensely in solving many of the problems.

We do not know exactly what system of Astronomy was followed in the time of the Bharata war for preparing the calendar of dates, nakṣatras and tithis. But we may take it to be of fairly an advanced type, and capable of being verified (as will be seen later) and of standing the test of rigorous calculations by the modern improved Astronomy.

Review of Contemporary Workers

The latest researches on the date of the Bharata war were done by Professor P. C. Sen Gupta, M. A. of the Calcutta University, Mr. Karandikar, Editor, *Keshari*, Poona and Dr. K. L. Daftari of the Nagpur University.[1] All of them based their dates on extraneous traditional sources, without even questioning the reliability of the same. None of them tried to get at their respective dates from the internal evidences, in the *Mahābharata*. They used these evidences only as confirmatory to their preconceived dates.

Professor Sen Gupta accepted the date given by Varahamihira in his *Bṛhat-Saṁhitā*. Varāha cited Vṛddha Garga as his authority. His statement runs as follows:

आसन् मघासु मुनयः शासति पृथ्वीं युधिष्ठिरे नृपतौ ।
षड्द्विक-पंच-द्वियुत-शककालस्तस्य राज्ञश्च ॥[2]

(*Translation*: The seven Ṛṣis (Ursa Major) were in the nakṣatra Maghā during the reign of King Yudhiṣṭhira. The year of this king (Yudhiṣṭhira) is equal to Saka year plus 2,526.)

The Śaka year O (zero)=78 A. D. The O (zero) of Yudhiṣṭhira's era=78 - 2526= - 2448 A. D.=2449 B. C. Professor Sen Gupta accepted this year (2449 B. C.) as the beginning of Yudhiṣṭhira's era and the date of the Bhārata war. Neither Varāha nor Vṛddha Garga supplied any argument in favour of this statement. Professor Sen Gupta had also no argument in its favour. From the mention of Śaka era in the statement, it appears that the time of Vṛddha Garga comes after 78 A. D.; hence, his dogmatic statement on the Bhārata war cannot be accepted as true, unless it is supported by other more reliable evidence.

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[1] We may add the name of Professor V. B. Athavale of the H. P. T. College, Nasik who wrote some articles which were published in the Ganganatha Jha Research Institute's *Journal* Vol. IV —*Editor*

[2] *Bṛhat-Saṁhitā*, Saptarṣi çara 3.

Mr. Karandikar did not rely on the *Mahabharata* for his date which is 1931 B. C. He derived it from the list of geneologies, given in the *Vayvpurana*. He gives his calculation as given below:

Barhadratha Kings (Period of)	..	1,006 years
Pradyota ,, ,,	..	138 ,,
Śaiśunāga ,, ,,	..	365 ,,
Nandas ,, ,,	..	100 ,,
Accession of Candra Gupta	..	322 B. C.
	Total=	1931 B.C.

The date of Dr. K. L. Daftari is 1,197 B. C. He also did not follow the *Mahābhārata* in getting his date, but derived the same from the list of Paurāṇic geneologies. His calculation is as follows:

Bārhadratha Kings (Period of)	..	536 years
Pradyota	..	69 ,,
Śaiśunāga	..	180 ,,
Nandas	..	100 ,,
Accession of Candra Gupta	..	312 B. C.
	Total=	1,197 B. C.

It may be noted that Dr. Daftari made the total period of Bārhadratha, Pradyota and Śaiśunaga kings nearly half of what is given in the Purāṇas. His argument for this is that the word Varṣa (year) formerly meant a half year.[8]

But in our opinion there are enough materials in the *Mahābharata* itself which if relied on and properly worked out, might yield us a satisfactory date for the Bhārata war, quite independent of all external evidences.

There are two very significant references in the *Mahabharata* capable of giving us a clue for the date of the Bhārata war. They are:

8 *Astronomical Method, Chronology of Ancient India* by Dr. K. L. Daftari, I. P. 94.

(1) Bhīsma's statement regarding the date of his expiry, and

(2) Kṛṣṇa's statement regarding the date of the beginning of the war.

They are given below with translations :

(1) *Bhīṣma's statement—*

परिवृतो हि भगवान् सहस्रांशुर्दिवाकरः।
अष्टपञ्चाशतं रात्र्यः शयानस्य (च ?) मे गताः॥
शरेषु निशिताग्रेषु यथा वर्षशतं तथा।
माघोयं समनुप्राप्तो मासः सौम्यो युधिष्ठिर॥
त्रिभागशेषपक्षोयं शुक्लो भवितुमर्हति॥[4]

Translation—The thousand-rayed sun has certainly turned back (i. e. the sun has crossed the southern solstice and begun his northerly course). I have passed 58 days on the bed of sharp arrows. This time has been, as it were, 100 years. O! Yudhiṣṭhira, the month of Solar Māgha has just set in, and the three-fourths of the lunar month is gone ; this is Śukla Pakṣa, or the bright half of the lunar month (i. e. the tithi on this day is Sukla eighth).

(2) *Kṛṣṇa's statemeut to Karṇa—*

सप्तमाच्चापि दिवसादमावास्या भविष्यति।
संग्रामे युज्यतां तस्यां तामाहुः शक्रदैवताम्[5] ॥

Translation—After seven days from today there will be amāvāsyā (new moon day) in the nakṣatra of Jyeṣṭhā. So begin the war on that day.

Bhīṣma made his statement to Yudhiṣṭhira just before his death. It gives us the following information :

(a) that he died on the southern solstice day at the beginning of the solar month Māgha.

(b) that the tithi on the day of his expiry was Sukla eighth.

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[4] *Mahabharata*, Anusasana Parva, Ch. 167.

[5] *Mahabharata*, Udyoga Parva, Ch. 142, V. 18.

(c) that the war began just 67 days before his death; for he was on the bed of arrows for 58 days; (he was laid on this bed, on the 10th day of the war).

Kṛṣṇa made his statement to Karṇa, as an ultimatum, on the failure of his peace mission to the Kauravas. It gives the following information:

(a) that the tithi on the first day of the war was Amavasyā, and

(b) that the sun on this amavasya day was in the nakṣatra Jyestha.

Combining this statement with that of Bhīṣma, we get the clue to the date of the Bhārata war. In the year of the war, the sun took 67 days, in moving from Jyeṣṭhā to the then southern solstice. In 67 days, the sun moves through 67° approximately. Hence the problem may be put in the following form [assuming the new moon in question, to have ended at the star Jyeṣṭhā (Antares).]—"To find the year when the southern solstice was at a distance of 67° from the *star* Jyeṣṭhā." This is an easy astronomical problem to solve. When worked out, the resulting date would be somewhere in the 15th century B. C. as will be seen later on.

The date of the Bharata war, as accepted by Professor Sen Gupta, is 2,449 B. C. In this year, the star Jyeṣṭha was at a distance of 80° from the then southern solstice. So the time that would be taken by the sun to move from Jyeṣṭhā (star) to the southern solstice would be about 80 days. In order to meet this difficulty he had to make necessary changes in the statements of Kṛṣṇa and Bhīṣma to adapt them to his theory. He accepted that there was conjunction of the sun with the *star* Jyeṣṭhā, in amāvāsyā, but rejected that the war began on this date. In Bhīṣma's statement, he accepted that he (Bhīṣma) died on the southern

solstice day and that the war began just 67 days before his expiry. But he rejected the rest. In consequence of these changes the tithi on the first day of the war became 80-67=13th Śukla instead of amāvāsyā as in Kṛṣṇa's statement, and the tithi on the day of Bhīṣma's expiry became Kṛṣṇa 8th instead of Śukla 8th as in Bhīṣma's statement. Similarly, he changed other evidences of the *Mahābhārata* (including the statement of Vyāsadeva and Baladeva) as will be seen later.

It is fortunate for him, that he got support for these changes in a treatise named *Bhārata Sāvitrī* quoted by Nīlakaṇṭha (16th century A. D.), in his commentary on the *Mahābhārata*. How far this treatise is authentic nobody knows. It might be the production of Nīlakaṇṭha himself. It proposes to reconcile different conflicting statements in the *Mahābhārata* (as they appeared to be, to the author of the *Bhārata Sāvitrī*) by making changes here and there in the evidences. It was expected of Prof. Sen Gupta to prove first, with sufficient reasons, that the treatise *Bhārata Sāvitrī*, and its author might be relied on, before accepting it and thereby rejecting Bhīṣma's statement, regarding the tithi at least. He seems to be silent on it. When a statement is accepted, it should be accepted in full, or its value as evidence ceases to exist.

As a matter of fact, all the evidences, in connection with the Bhārata war, given in the *Mahābhārata*, are quite consistent with one another. Had Prof. Sen Gupta not altered statements of Bhīṣma, Kṛṣṇa and others, he would have found the requisite data in the *Mahābhārata* itself, for determining the date of the Bhārata war and would not then have any necessity to take recourse to the dogmatic traditional date as afforded by Varāha-Mihira in his *Bṛhat-Saṁhitā*.

The date of the Bhārata war according to Mr. Karandikar is 1931 B. C. as we have seen above. As to the tithis

he did not accept the statement of Bhīṣma nor that in the *Bhārata Sāvitrī*. He followed *Vedāṅga Jyotiṣa* and took the tithi on the date of Bhīṣma's expiry to be the Kṛṣṇa 4th. i. e. the fourth day of the dark half. For, according to the *Vedāṅga Jyotiṣa*, there can be only five tithis on which the 1st of solar Māgha can fall. Of these the Kṛṣṇa 4th is one. Why he selected Kṛṣṇa 4th of all the probable tithis, he did not appear to explain.

According to this selection of the tithi for the date of Bhīṣma's expiry, the first day of the war was, in his opinion, on the Śukla 10th and not amāvāsyā as in Kṛṣṇa's statement and in consequence, the amāvāsyā (as spoken of by Kṛṣṇa to Karṇa) in which the sun and the moon were in conjunction with Jyeṣṭhā, fell on a day just 11 days before the 1st day of the war, i. e. 78 days before Bhīṣma's expiry). This is the same as saying that the sun took about 78 days to reach the then southern solstice from Jyeṣṭhā. In 1,900 A. D., the sun took only 20.8 days to move from Jyeṣṭhā to the southern solstice of that year 78-20.8=57.2 days. This shows that the southern solstice had changed its position, in the interval between Bhārata war and 1,900 A. D. by a space, equivalent to the sun's motion of 57.2 days. Taking 1^0 roughly to be the daily motion of the sun, the shift, by precession, of the southern solstice during this interval, amounts to $57^\circ.2$. Assuming 72 years to be the time for 1° of precession, the interval amounts to $57.2 \times 72 = 4,118$ years, $1,900 - 4,118 = -2,218$ A. D. $= 2,219$ B. C.

Thus, taking the tithi as Kṛṣṇa fourth on the day of Bhīṣma's expiry, makes the date of the Bhārata war at about 2,219 B. C. which does not tally with the year 1931 B.C. as given by him.

Again by actual calculation, the tithi on the southern solstice day for the year 1931 B. C. becomes the Śukla 4th and not Kṛṣṇa 4th as stated by Mr. Karandikar. So there

was a difference of 15 tithis between the actual tithi and that calculated by Mr. Karandikar following the *Vedāṅga Jyotiṣa*. In his opinion, the calendars of tithis, nakṣatras etc., in the time of Yudhiṣṭhira were based on the system of the *Vedāṅga Jyotiṣa* and the people of the time used to follow the same irrespective of the actual tithis or nakṣatras, based on the correct positions of the sun or the moon. Thus, we might as well say, that they could take a full moon night for an amāvāsyā night, without any question. But all this goes against facts. There are enough evidences, in the *Mahābhārata*, that the calendars of the time were based on the real positions of the sun and the moon and that the tithis or the nakṣatras, calculated therefrom, were capable of being tested by observation. We give a few instances below in support of this view:

(1) When Duryyodhana was commanding his army, to start for Kurukṣetra at about 10 P. M. in the night of the Kṛṣṇa 5th, he referred to the moon's rising with the nakṣatra Puṣya.[6]

(2) Vyāsadeva, in course of a talk, spoke to Dhṛtarāṣṭra, of his observation of the moon and the sky in the full moon night of Kārttika.[7]

(3) In Bhīṣma's statement we find that the sun had *actually* crossed the southen solstice, on the day of his expiry and that he spoke of it to Yudhiṣṭhira with confidence.

These and other evidences, in the *Mahābhārata* show that the people of the time were not blind followers of calendars based on the faulty system of the *Vedāṅga Jyotiṣa*, but followed calendars giving results from actual positions of the heavenly bodies at the time.

So it is advisable for Mr. Karandikar to readjust his date, so that it might be consistent with all the details. As it is now, it cannot be accepted.

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[6] *Mahābhārata*, Udyoga Parva. ch. 150. 3.

[7] *Ibid*, Bhīṣma Parva, ch. 2. 23.

We have seen above that the date of the Bhārata war as accepted by Dr. K. L. Daftari, is 1197 B. C. Dr. Daftari gives the criterion of the year of Bhārata war as follows: " The year of the War is *minus* 1,695.3 i. e. 1197 B. C. At this time the sun turned to the North when it entered the constellation Dhaniṣṭhā . . . . .Now it is an undisputed fact that the sun was in the Jyeṣṭhā on the amāvāsyā of the Kārtika according to the calender of those days. The maximum number of days after that amāvāsyā that the sun would take to enter the Dhaniṣṭhā is 68 as already shewn."[8] We shall try to see how far he could follow the requirement.

The southern solstice day in 1197 B. C. fell on the 1st January. J. D. for that day is 1284219. At Kurukṣetra mean noon, the positions of the sun and the moon on this day, are as below :—

Apparent Moon	.. 71°	32′	13″	
" Sun	.. 270	7	52	
" Diff.	.. 161	24	21	
" Tithi	= 13.467			i. e. Śukla 14th but not Śukla 8th as required by Bhīṣma's statement.

Again, according to Bhīṣma and Kṛṣṇa, the war began just 67 days before this, when the tithi was amāvāsyā and the sun was then in Jyeṣṭhā.

The day which was just 67 days before the southerr solestice day was the 26th October 1198 B. C. The positions of the sun and the moon on this day (K. M. N.) were :—

Apparent Moon	.. 258	6	42	
" Sun	.. 201	50	2	
" Diff.	.. 56	16	40	
" Tithi	= 4.69			i. e. Śukla 5th and not amāvāsyā as required.

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[8] Dr. Daftari's *Astr. Method Chronology of Ancient India*, p. 124.

The moon was not in Jyeṣṭhā as required but she was in Pūrvāṣāḍha which ended at 258° 49′ (499 A.D.) taking the first point of Dhaniṣthā to be 295°′29. (499 A.D.)

Longitude of the sun from equinox of date as given above	201° 50′ 2″
Precession from 1197 B. C. to 499 A.D.	23 25 38
The longitude of the sun referred to 499 A.D.	225 15 40 (499[9])
The nakṣatra Jyeṣṭhā begins and nakṣatra Anurādhā ends at . . .	228°49′ 0 (499)
The sun is in nakṣatra Anurādhā. The longitude of star Jyeṣṭhā	228° 54′ (499)

The sun is behind the star Jyeṣṭhā by 3°39′ or 3°.65′.

Taking approximately 1° to be the daily motion of the sun, he will take more than 3½ days to reach the beginning of the nakṣatra Jyeṣṭhā or the star Jyeṣṭhā, from the noon of the first day of the war. Therefore the time that would be taken by the sun to move from Jyeṣṭhā to the then southern solstice would be about 67 – 3.6 or 63.5 days and not 67 days as required by the statements of Bhīṣma and Kṛṣṇa. So the year 1198-97 B. C. fails to satisfy the requirements of the *Mahābhārata* evidences, and therefore, the year cannot be accepted.

Faced with this difficulty Dr. Daftari shifts his ground and in a letter to me he informed me of his viewpoint as follows :—

> " Bīṣhma did not expire on the *actual solstice*[10], but within two or three days from the *solstice of the Vedāṅga Jyotisha*, that occurred after 66 (?) tithis from the अमावास्या of कार्त्तिक of the *Vedāṅga Jyotiṣa* calendar i. e. after 67 days from the

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[9] When the number 499 is placed within brackets after any longitude it would mean that the longitude concerned is referred to the equinox of 499 A. D.

[10] Italics are ours.

beginning of the war. In paragraphs 206-212 I have shown that the Uttarāyaṇa of *Vedāṅga Jyotiṣa* occurred 24.51 days after the real· Uttarāyaṇa. Therefore Bīṣhma expired on or about the 26th of January on which the tithi would be 10th of Shukla Paksha. The war therefore began on 21st November (Monday) and ended on 8th December."

In para. 207 of his book he says :[11]

"That the constellation of the moon and the day of the turning of the sun, given in the *Mahābhārata* were arrived at by the wrong process in vogue in those days."

In para 113 of his book, he writes :

"Now in the days of war (minus 1695-198 B. C.) the equinox was 90° to the East of Dhanishtha and the sun turned to the North when it entered the constallation Dhanishtha. So Bhīṣma must have died soon after the sun entered the Dhaniṣṭha *according to the calendar of those days* . . . . . . Therefore the Uttarāyaṇa began within 68 days from Amāvāsyā of Kartika. And Bhīṣma must have died within two days from the beginning of the Uttarayàna. Therefore Bhīṣma must have died within 70 days from the amāvāsyā of the Kartika."

Again, in para 98 he says :" On the Amāvāsyā of the month, named Kārtika by us, the sun was in the Jyeṣṭhā. This happens in the Kārtika in Idavatsara, the third of the cycle of five years of the *Vedāṅga Jyotiṣa* . . . . . . The War was therefore begun on or after the Amāvāsyā of the month nàmed Kârtika. It is also thus proved that the War was fought in Idavatsara, the third year of the circle."

From the above we draw the following conclusions :—

(1) According to Dr. Daftari all data given in the *Mahābhārata*, regarding tithis, nakṣatras solstice days and the like are wrong ; for they were arrived at by wrong process then in vogue.

(2) *Vedāṅga Jyotiṣa* was then used for making calendars of the time.

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11 Dr. Daftari's book is entitled '*The Astronomical Method, and Its Application to The Chronology Of Ancient India*.

(3) The tithis, the nakṣatras etc. derived from the system of *Vedāṅga Jyotiṣa* are all wrong.

(4) According to the *Vedāṅga Jyotiṣa*, the southern solstice was always at the beginning of the nakṣatra Dhaniṣṭhā.

(5) The sun must be, according to this system, in the nakṣatra Jyeṣṭhā, just 67 days before the southern solstice day, as derived from the *Vedāṅga Jyotiṣa*.

We shall now try to see the consequences of taking 21st November, 1198 B. C. as the beginning of the war. Dr. Daftari follows modern Astronomy in deriving his positions for the sun and the moon for this day. We follow him:

21st November 1198 B. C. Julian days, 1284178 (K. M. N.)

6 *A. M. Kurukṣetra*

Mean sun	228° 7′ 42″	Apparent sun		228° 7′ 2″
Perigee	228 25 47	”	Moon	228 36 15

Eccentricity 0.018045 Tithi $\frac{10\ 29\ 13}{12}$ = 0.8735 = 1st Śukla

Mean moon	243 26 23
Apogee	163 58 26
Precession	= 23 25 38

Long. of the sun referred to Equinox of 499 A.D.

251° 52′ 40″ (499)

Long. of moon ” ” ” 262 1 53 (499)

Nakṣatra of the sun is Mūla which ends at 256 29 40 (499)

” ” moon is Pūrvāṣāḍha 268 49 (499)

But according to the requirement they ought to have been in the nakṣatra Jyeṣṭhā. But following the *Vedāṅga Jyotiṣa* we have to consider the nakṣatra Mūla to be the nakṣatra Jyeṣṭhā.

The day, 67 days later than the 21st of November, 1198 B. C., is the 27th of January 1197 B.C.

27th of January 1197 B.C. Julian days 1284245 (K.M.N)

Apparent Sun	296°	19′	17″	Pree.	23°	25′	38″=	
					319°	44′	55″	(499)
Apparent moon	54	22	18		77°	47′	56″	(499)
Difference					8	118	3	1

Tithi $=\frac{118.05}{12}=9.8375$ 10th Śukla

Nakṣatra of the sun is Śatabhiṣā which ends at

322 9 (499)

„ „ moon is Ārdrā „ „ 82 9 (499)

So the southern solstice falls very nearly at the end of the nakṣatra Śatabhiṣā. But according to the *Vedāṅga Jyotiṣa* we have to consider it as the beginning of Dhaniṣṭhā.

Are we then to believe that such eminent persons as Kṛṣṇa, Bhīṣma and Vyāsadeva, who are reputed to have been very wise, very learned, very intelligent, tolerated this state of things and blindly followed such a disreputable system as *Vedāṅga Jyotiṣa*, without even questioning the correctness of the calendar based on it ? We cannot conceive of it.

But his stand regarding the positions of planets viz. Mercury, Venus, Mars, Jupiter and Satura, is quite different from that regarding the positions of the sun and the moon. He gives[12] the positions of the planets for the 21st November 1,198 B. C. i. e. for the 1st day of the battle and got his results from the elements and the processes of the Modern Astronomy by back calculation. It is surprising that the result tallies perfectly with some of the evidences on planets, given in the *Mahābhārata*. This goes to prove that the people of the time were extremely advanced in Astronomy, so as to observe and calculate heavenly bodies accurately.

[12] Page 56 of his book.

But we have seen before that they were according to Dr. Daftari, so very poor in the science of Astronomy, that they took nakṣatra Śatabhiṣa for Dhaniṣṭhā, 27th January 1197 B. C. for 1st of January 1197 B. C. in regard to the sun's passage through the southern solstice and nakṣatra Mūla for Jyeṣṭhā, on the first day of the war. The determination, of the position of the sun and the moon, is much simpler than that of the planets. How is one to explain this anomaly? To be consistent, we are to take the people of the time to be equally competent to observe and calculate the positions of the sun and the moon, as well. If that be so, it was not possible for them to make mistakes, regarding the southern solstice day and the tithis and the nakṣatras of the sun or of the moon on different dates. And as the requirements, in these respects, have not been satisfied, with the year 1198-97 B.C, the year cannot be accepted, as the real date of the Bhārata war.

As to planetary positions, given by Dr. Daftari, it may be said, that they really hold for the year 1198-97 B. C. Most likely, they are the results of observations made by some astronomer in 1198 B. C; but were, later interpolated into the body of the *Mahābhārata* by the observer himself or by some of his follwers.

We shall take up the question of the planetary positions again, later on, and try to see how far the statements, in the *Mahābhārata*, in connection with these, are dependable.

The problem is "To find the date of the Bhārata war" and the data given are the evidences of the *Mahābhārata*. The above scholars assumed their respective dates at the outset and changed the evidences, so that they may fit in with their respective preconceived dates. The procedure adopted by them is objectionable and unjustifiable.

All of these investigators are unanimous about the authenticity of Bhīṣma's statement, as to his death occurring

on the southern solstice day and as to the interval between this date and the date of the beginning of the war.

But, on the third point (i. e. the tithi in the Bhīṣma's statement), they differ. Professor Sen Gupta is against it, as it is antagonistic to his theory. Mr. Karandikar objects to it, as it is against the system of *Vedāṅga Jyotiṣa*, which he follows; but he did not take the trouble of proving that it was the *Vedāṅga Jyotiṣa* only and no other system, that was in use in the time of the Bhārata war. The author of the *Bhārata Sāvitrī* tried, as mentioned above, to get a reconciliation between the different statements given in the *Mahābhārata*. His endeavour would have been successful and his results welcomed if he had not to change any of the data of the *Mahābhārata*, particularly the tithi in Bhiṣma's statement, which is very famous. We see no reason for this uncalled for change in this famous statement.

Baladeva's statement which has been given later, seems to be in apparent confiict with Kṛṣṇa's statement. Apparentiy, this led the author of the *Bhārata Sāvitri* to make wholesale change in the calendar of the year of the Bhārata war. This again, necessitated the change in Bhīṣma's statement as well. All this seems to be unreasonable. In our opinion, Bhīṣma's statement, should have been kept in tact and the statements, that go against it, might have been rejected as spurious. As a matter of fact, Baladeva's statement is not really antagonistic to others. The misinterpretation of the verse, by the comentator Nīlakaṇṭha, has produced all this confusion, as will be shown, later on.

Preliminary Steps to the Determination of the date of the Bhārata war.—

We now proceed, in the following pages, to investigate into the date of the Bhārata war. We propose not to depend on any tradition, nor to assume any date at the very out-set, but to follow, strictly, the evidences in the

Mahābhārata alone and thereby try to get to the date of the Bhārata war, if possible.

We shall first try approximate method to get at the time of the war, but propose, later on, to use more rigorous methods to find the correct year which might fit in exactly with the different events, in connection with the Bhārata war as obtained from the *Mahābhārata*.

Bhīṣma's statement, both text and translation, has already been given.[13] Here are two more statements, to show that he really died on the southern solstice day. Vaiśampāyana says to Janmejaya—

शृणुष्वावहितो राजन् शुचिर्भूत्वा समाहितः।
भीष्मस्य कुरुशार्दूल देहोत्सर्गं महात्मनः॥
निवृत्तमात्रे त्वयने उत्तरे वै दिवाकरे।
समावेशयदात्मानं आत्मन्येव समाहितः॥ [14]

Translation.—" O! The Greatest of tne Kurus, listen attentively the event of the expiry of the Great Bhīṣma. Just at the moment of the sun's reaching the Winter solstice, he (getting detatched from the external senses) concentrated himself to his inner-self.

Bhīṣma asked Yudhiṣṭhira to come to him at the time of his expiry on the southern solstice day :—

आगन्तव्यं च भवता समये मम पार्थिव।
विनिवृत्ते दिवाकरे प्रवृत्ते चोत्तरायणे॥[15]

Translation.—Come to me at the time when I would expire, when the Dakṣiṇāyana (sun's southerly course) will just end and the Uttarāyaṇa (sun's northerly course) will begin.

These, along with the statements of Bhīṣma and Kṛṣṇa (as already given) furnish us with the necessary con-

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[13] P. 4.

[14] *Mahābhārata*, Sāntiparva, Ch, 47. Verses 2-3.

[15] *Mahābhārata*; Anuśāśana Parva.

ditions for the year of the Bhārata War according to our stand. They are as follows—

(a) Bhīṣma expired on the southern solstice day.

(b) The battle began just 67 days before this date.

(c) On the first day of the battle, the sun was in the nakṣatra Jyeṣṭhā.

(d) The tithis on the first day of the War and on the day of expiry of Bhīṣma were respectively amāvāsyā and Sukla eighth respectively.

Before taking up the question for solution, we have to make two *provisional* assumptions at the out-set :—

(1) We accept for the present, that the star β Delphini, the Yogatārā of the nakṣatra Dhaniṣṭhā, marked the first point of the nakṣatra. Its longitude referred to the equinox of 499 A. D. was 295° 29′[16]. From our further consideration, later on, we shall find that this was so. The beginnings and the ends of the other nakṣatras were then reckoned really from this point.

(2) In the third condition, given above, the sun ought to be in the nakṣatra Jyeṣṭhā ; but it is not mentioned therein, at which particular point of this nakṣatra, the sun then was. The nakṣatra Jyeṣṭhā extends from the longitude 228° 49′ (499) to 242° 9 in the system of 27 nakṣatras[17]. If the sun were at any point between these limits, then, after 67 days, he would be at some point between 295° 49′ to 309° 9′ approximately, so that the corresponding southern solstitial point would then be somewhere between these two limits assuming the system of 27 nakṣatras to have been in vogue at the time. The corresponding year of the Bhārata war would then lie somewhere between years 1,370 B. C. and 2,338 B. C. We assume for the present

[16] Burgess' Translation of *Sūryya-Siddhānta*.

[17] *Vide* 499 Appendix B.

that the sun was just in conjunction with the star Jyeṣṭhā (Scorpionis or Antares) at the beginning of the war. But, later on[18] we shall see, that the limits would be narrowed down, from other considerations, proving thereby, that the sun was really very close to the star Jyeṣṭhā, on the 1st day of the war.

The star Jyeṣṭhā (Antares) is fixed in the sky, and is to the west of the southern solstice. The solstice very slowly and gradually changes its position, at the rate of 1° in about 72 years. Its motion is towards the West. So the distance, between the nakṣatra Jyeṣṭhā and the southern solstice, would gradually get less and less, with the time. In the time of the Bhārata war, sun took 67 days to pass from Jyeṣṭhā to the then southern solstice. In 499 A.D. he took 40.2 days, to move from the star Jyeṣṭhā to the southern solstice for that year. In 1900 A.D. he took only 20.8 days, to cover the space from Jyeṣṭhā to the southern solstice of this year. Thus in the interval, between the Bhārata war and 1900 A. D. the solstice shifted through a distance, equal to 67-20.8 or 46.2 days' journey of the sun, that is, through 46°.2 and in the interval between 499 A.D. and 1,900 A. D. i.e. in 1,401 years, the solstice shifted through 40.2-20.8 or 19.4 days' journey of the sun, that is 19.°4. If we put D for the year of the Bhārata war, then, the interval between the Bhārata war and 1,900 A.D. may be put down as 1900-D. This is practically a question of simple proportion.

$$\frac{1900\text{-}D}{1401} = \frac{46.2}{19.4} \quad \therefore \; 1900\text{-}D = \frac{46.2}{19.4}$$

$$D = 1900 - 3335 = -1435 \text{ A. D.} = 1436 \text{ B. C.}$$

Or we may put the problem in another form :—

If 72 years be required to produce a shift of 1° approximately then what would be the time required to produce a shift of 46°.2 ?

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18 P. 42.

The time required would be

$46^\circ.2 \times 72 = 3327$ years.

But this shift ($46^\circ \cdot 2$) was assumed to have been produced in 1900-D years.

$1900 - D = 3327$ years

$D = 1900 - 3327 = -1427$ A.D. $= 1428$ B. C.

The processes given above are very rough and the results therefrom are only approximate. Still they give us an idea of the probable date of the Bhārata war, which is near about the dates 1428 B. C. and 1436 B. C.

By applying a more rigorous method, we propose to see how far one or the other of these years agrees with our requirements. Let us take up the year 1436 B. C. and test it.

The longitude of Antares in 499 A. D. ..	228°54′ (499)
Precession up to 1436 B.C @ 49.73 per year ..	26.42
The longitude of Antares as well as the true longitude of the Sun in conjunction with it, in 1436 B. C. from equinox of date ..	202°12′
Sun's perigee in 1436 B. C. =223°53′	
Sun's Eccentricity =0·018143	
Equation ..	0°45′
Meanlong. of Sun when in conjunction with Antares ..	202°57′
Mean motion of Sun in 67 days ..	66°2′
Mean long. of Sun after 67 days ..	268°59′
Equation ..	1°30′
Sun's true longitude after 67 days ..	270°29′

Thus it appears that the year 1436 is very close to the correct year of the war, as the sun in this case, after leaving Antares reaches very close to southern solstice, the longitude of which is 270° 0′, from the equinox of date.

Referring to the fourth condition for the year of the war, we know that the tithi on the southern solstice day

must be Sukla eighth. But none of the years 1,428 B. C. and 1,436 B. C. conforms to the requirement. In the case of the year 1,428 B. C., the tithi on the southern solstial-day was Śukla eleventh and in the case of 1,436 B. C. it was Śukla 13th. The year 1431 B. C. however, agrees with this requirement. So the year 1431 B. C. might be the required date of the war.

Events in connection with Bhārata war.

We shall now test this year and see if the calendar for the year, regarding dates, nakṣatras and tithis, agrees well with astronomical events recorded in the *Mahābhārata.*

All calculations below have been done with the constants and elements of the Modern Astronomy for the meridian of Kurukṣetra.

(*A*) *Day of Bhīṣma's expiry*

The Southern solstitial passage in this year (1431 B. C.) fell on the 2nd January.

Julian days for this date=1198 752.0 (K. M. N.)

At mean noon of Kurukṣetra.

Mean Sun	..	268°	30′	39″
Perigee	..	223	58	18
Sun's eccentricity	...	0·	018143	
Equation	..	1	28	48
Apparent longitude of sun	..	269	59	27
Mean Moon	..	0	9	58
Perigee of the moon	..	185	33	28
Moon's asc. node	..	227	33	36
Equation[19]	..	0	23	52
Apparent moon	..	0	33	50

[19] In the case of the moon, in addition to the equation of centre, four other corrections have been applied to get her true position for the day of Bhiṣma's expiry (2nd Jan. 1451 B. C.) and for the 1st day of the battle (27th Oct. 1432 B. C.); for other dates the equation of centre only has been used.

From the longitude of the sun it will be seen that he crossed the southern solstice at about 12 minutes after mean noon. So it was the solstice day and the beginning of the solar Māgha.

The difference between the longitudes of the sun and the moon at mean noon was 90° 34′ 23″. One tithi is equivalent to 12° of this difference. Therefore, the tithi at mean noon was $\frac{90^\circ\ 34'}{12} = 7{\cdot}547$. This shows that it was the eigth day of the bright half (Śukla eigth) as required.

A (a) According to Bhīṣma, the three fourths of the lunar month of Māgha expired on the southern solstice day. It proves that the lunar month at the time were Pūrṇimānt i. e. they were considered to begin and end with Pūrnima.[20] So it is clear that the lunar month of Māgha began about 22 days before the southern solstice day and it ended about 8 days therefrom.

In Vedic times the month-names were as : Madhu, Mādhava, Śukra, Śuchi, Nabhas, Nabhasya, Iṣa, Ūrja, Sahā, Sahasya, Tapas and Tapasya. Later, they were replaced by other month-names formed after the nakṣatras in which full moon might occur in those respective months. They are as Caitra, Vaiśākha, Jyeṣṭha, Āsāḍha, Srāvaṇa, Bhādra, Āświna, Kārtika, Mārgaśīrṣa, Pauṣa, Māgha and Phālguna, respectively.

Amarakoṣa, the well known Sanskrit Lexicon, gives the rule for framing such month-names. It says :—

पुष्ययुक्ता पौर्णमासी पौषो मासे तु यत्र सा।
नाम्ना स पौषो माघाद्याश्चैवमेकादशापरे॥

Translation.—The month, in which the full moon occurs in the nakṣatra Puṣya is called Pauṣa. In the same

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20 Kālavarga, between the 1st. line and the 2nd. line of verse 14, called a Prakṣipta verse.

way, names of the remaining eleven months from Māgha onward are formed.

The *Sūryya Siddhānta*.—Also gives a similar rule:

नक्षत्रनाम्ना मासास्तु ज्ञेया पर्वान्तयोगतः

Translation.—Months are named after the nakṣatras in which a fullmoon may occur.

Hence, in the month of Māgha, the full moon is expected to be completed in the nakṣatra Maghā.

It may be noted here that in the time of Yudhiṣṭhira, the system of 28 nakṣatras (including Abhijit) was in vogue, as will be seen later, when the statement of Mārkaṇḍeya[21] will be taken up for discussion. The nakṣatras were then reckoned from the first point of Dhaniṣṭhā, which was then considered to be the zero point of the sidereal system.

In our calculations, the longitudes, mentioned therein, have been taken from the vernal equinox of date. In 1432-31 B. C., the first point of Dhaniṣthā was behind the southern solstice of the year by $1^\circ\ 10'$, so that, its longitude referred to the equinox of date was $270^\circ\ 0'-1\ 10'=268^\circ\ 50'$. This was behind the then Vernal equinox by $360^\circ-268^\circ\ 50'=91\ 10'$. Therefore, to ascertain the nakṣatra corresponding to a particular longitude, $91^\circ\ 10'$ will have to be added to it, to get the correct distance of this point (indicated by the longitude) from the first point of Dhaniṣṭhā (β Delphini).

The table, in the appendix A, gives the longitudes for the beginnings and the ends of all nakṣatras (of the system of 28 as well as of that of the 27 nakṣatras). By referring to this, the nakṣatra corresponding to a longitude (as corrected for Dhaniṣṭhā) will be obtained

We shall now try to see if the nakṣatra in the full moon following the southern solstice day, was Maghā.

20a *Sūrgya Siddhanta*

21 *Mahābhārata*, Vanaparva, Ch. 229, verses 1-11.

At Kurukṣetra mean noon of 9th January 1431 B.C.

Apparent Moon	..	87°	13′	15″
Apparent Sun	..	277	3	22
Difference	..	170	9	53

$$\text{Tithi} = \frac{170 \quad 9 \quad 53}{12} = 14.1804 \text{ Pūrnimā}$$

Pūrṇimā began at $6^h\ 10^m$ A. M. of the 9th January and ended at 7. 2. A. M. of 10th January, 1431 B. C.

Nakṣatra.

Apparent Moon	..	87°	13′	15″
Add	..	91	10	
		178	23	15

The nakṣatra Maghā extends from 180° 0′ to 192° 51′ (Appendix A) Maghā began at $2^h\ 43^m$ P. M. of 9th January and Maghā ended at 1° 45′ P. M. of 10th January 1431 B. C.

The lunar month Māgha ended with the end of the full moon when the lunar month Phālguna began.

(B) *Bhīṣma's fall* (5th November 1432 B. C.).

According to his statement, Bhīṣma was laid on the bed of arrows, 58 days before his expiry i.e. on the 5th of November 1432 B. C. The apparent positions of the sun and of the moon on that date at mean noon were :

Apparent Moon	..	320°	52′	55″
Apparent Sun	..	210	52	46
Difference	..	109	9	9

$$\text{Tithi} = \frac{109.1525}{12} = 9.096$$

The tithi in the morning was the 9th (Śukla). The Śukla 10th began at about noon.

It was the tenth day of the war. So the tithi on the first day of the war should be Amāvāsyā as required and this was just nine days before this date.

(C) *The 1st day of the battle* (27th October 1432 B. C.).

It was this amāvāsyā day on which the sun and the moon were in conjunction at or close to the star Jyeṣṭhā, the divinity of which was Śakra. On the failure of his peace mission, on the 20th October, Kṛṣṇa gave ultimatum to Karṇa, giving the date as the date of the beginning of the war. The position of the moon and the sun at mean noon were :—

Tithi

Apparent Moon	..	199°	33′	48″
Apparent Sun	..	201	41	54
Difference	..	357	51	54

$$\text{Tithi} = \frac{357.865}{12} = 29.822 \text{ Amāvāsyā}$$

Amāvāsyā ended at about 3^h 46^m P. M. when the longitude of conjunction was 201° 51′ 1.″

Nakṣatra.

Longitude of Moon at conjunction	201	51
Add	91	10
Longitude referred to zero Dhaniṣṭhā	293	1

The nakṣatra Jyeṣṭhā extends from 282° 51′ to 295° 43′ Hence, the moon and the sun at conjunction were in the nakṣatra Jyeṣṭnā.

The longitude of the star Jyeṣṭhā from equninox of date	202°	15′
Add	91	10
The longitude of star Jyeṣṭhā from zero Dhaniṣṭhā	293°	25′

Hence, the conjunction was at a distance of about 24″ behind the star Jyeṣṭhā. Thus the results agree with the requirements.

(D) *Date of Kṛṣṇa's statement to Karṇa* (20th October 1432 B. C.)

It has been stated before that Kṛṣṇa made his statement to Karṇa, 7 days before the beginning of the war. The text and the translation thereof have already been given.[22] The tithi on that day was Krsna eighth i.e. the eighth tithi of the dark half. The moon was then in the nakṣatra Maghā as implied by the statement. The positions of the sun and the moon at mean noon of that day were :

Apparent Moon	..	90°	0′	19″
Apparent Sun	..	194	34	7
Difference	..	265	26	12=264.44

$\text{Tithi} = \frac{265.44}{12} = 22.12$ or Kṛṣṇa eighth.

Nakṣatra.

Longitude of moon	..	99	0	19
Add	..	91	10	0
	..	190	10	19

From the table we see that the nakṣatra Maghā begins at 180° 0′ and ends at 192° 51′. Hence, the moon was then in the nakṣatra Maghā.

(E) *Duryodhana's statement about the nakṣatra Puṣya* (17th October 1432 B. C.)

Three days earlier, i. e. on the 17th October, Duryodhana commanded his forces to start for Kuruksetra ; he considered the time to be auspicious as the moon then was in the nakṣatra Puṣya and was rising with it.

प्रयाध्व वै कुरुक्षेत्रे पुष्योद्येति पुनः पुनः ।[23]

[22] *Vide* p. 4 *Supra.*

[23] *Mahābhārata* Uddyoga Parva, Ch. 150. Verse 3.

Translation :—March to Kurukṣetra. Puṣya is rising with the moon (to night).

Apparent moon at sunset	..	64°	1′	34″
Apparent sun at sunset	..	101	45	59
Difference at sunset	..	232	15	35=232.26

$$\text{Tithi}=\frac{232.26}{12}=19.355$$

It is the Kṛṣṇa fifth. It continued throughout the night.

The tithi being Kṛṣṇa fifth, the moon would rise at about 10 P. M. and this was the time when Duryodhana must have made the statement.

Nakṣatra.

Moon's apparent longitude	..	64°	1′	34″
Add	..	91	10	
		155	11	34

From the table we find that the nakṣatra Puṣya extends from 154° 17′ 9″ to 167° 8′ 34″. Hence, the nakṣatra Puṣya began before sunset and continued throughout the night. So Duryodhana's statement is verified.

(F) *Vyāsadeva on full-moon in Kṛttikā*. (12th Oct. 1432 B.C.)

In the course of a talk, at the beginning of the war, Vyāsadeva said to Dṛtarāṣṭra, that he had noticed several bad omens, amongst which, he mentioned the appearances of the moon and of the sky in the full moon night just preceding the amāvāsyā on which the battle began. The Moon had then been in the nakṣatra Kṛttikā

अलक्षः प्रभयाहीनः पौर्णमासीं च कार्तिकीम् ।
चन्द्रोऽभूदग्निवर्णश्च पद्मवर्णे नभस्तले ॥

Translation.—The full moon in the nakṣatra Kṛttikā became fire coloured and lustreless in the lotus coloured sky.

The full moon in question occurred on the 12th October 1432 B. C. when the positions of the moon and the sun at sunset were:

Apparent Moon	..	3°	19	22	
Apparent Sun	..	186	50	49	=176.476
Difference	..	176	28	33	

$$\text{Tithi}=\frac{176.476}{12}=14.706$$

It was the full moon night.

Nakṣatra.

Apparent Moon	..	3°	19′	22″
Add ..	..	91	10	
		94	29	22

From the table we see that the nakṣatra Kṛttikā extends from 90°0′ to 102° 51′ 26″. Therefore, the moon was in the nakṣatra Kṛttikā as required.

We shall have occasion to revert to this statement later on when discussing the theory of the *Bharata Sāvitri*.

(G) *Day of Yudhiṣṭhira's initiation to Aśwamedha*, (10th March 1431 B. C.)

Vyāsadeva told Yudhiṣṭhira, that his initiation to Aśwamedha sacrifice would take place on the full moon day when the moon would be in the nakṣatra Citrā.

चैत्र्यां हि पौर्णमास्यां तु तव दीक्षा भविष्यति।[24]

Translation.—Your dīkṣā (initiation) will take place on the day of full moon in Citrā.

The positions of the moon and the sun at sunset of the 8th March 1431 B. C. were:—

Apparent Moon	..	149°	0′	56″	
Apparent Sun	..	335	44	27	=173.275
Difference	..	173	16	29	

[24] *Mahābhārata*, Aśwamedha Parva, Ch. 72. Verse 4.

$$\text{Tithi} = \frac{173.275}{12} = 14.439$$

Therefore, it was the full moon day.

Nakṣatra.

Apparent longitude of moon at sunset		149°	0'	56"
Add " "		91	10	
		240	10	56

From the table we see, the nakṣatra Citrā extends from 231° 25′ 42″ to 244° 17′ 9″. Therefore, the moon was in the nakṣatra Citrā as required.

(H) *Kṛṣṇa's departure on peace mission*, [9th October 1432 B. C.]

Kṛṣṇa started for Hastināpura with a peace proposal to the Kauravas in the morning of the 9th October of 1432 B. C. when the moon was in the nakṣatra Revatī. It was on the Śukla twelfth—

ततो व्यपेते तमसि सूर्यें विमल दुद्गते (?)।
कैमुदे मासि रेवत्यां प्रययौ मधुसूदनः ॥[25]

Translation.—After the darkness of the night was dispelled and on the rise of the sun in the clear sky, Kṛṣṇa started in the nakṣatra of Revatī, in the solar month of Ūrja or Kārtika.

This was on the 9th october 1432 B. C. The month was then Kārtika and the nakṣatra, in the morning was Revatī.

The positions of the moon and the sun at sunrise (6 A. M.) were :—

Apparent Moon	..	321	39	17
Apparent Sun	..	183	9	30
Difference	..	138	29	47=138.497

[25] *Mahābhārata*, Uddyoga Parva, Ch. 83. Verses 8-22

Tithi= $\frac{138.497}{21}$=11.581=Sukla twelfth.

It began in the previous night at 10^h 49^m P. M.

Nakṣatra.

Apparent Moon	..	321°	39′	13″
Add	..	91	10	
		412	49	12
		360		
		52	49	13

The nakṣatra Revatī extends from 51° 25′ 42 to 64° 17′ 9″. Therefore, Revatī began at the close of the previous night.

(I) *Statement of Baladeva* (on the 18th day of the war; 13th November, 1432 B. C.).

Undue importance has been given by some to Nīlakaṇṭha's commentary to a statement of Baladeva, in which (according to the commentary) Baladeva is supposed to say that he came back on the nakṣatra Śravaṇā after his pilgrimage for 42 days.

चत्वारिंशदहान्यद्य द्वे च मे निःसृतस्य वै।
पुष्येण संप्रयातोऽस्मि श्रवणे पुनरागतः ॥[26]

Translation (According to Nīlakaṇṭha).—Today, is tne forty second day of my pilgrimage. For, I started in Puṣya and returned in Śravaṇā.

It has already been stated, that, on the first day of the war, the nakṣatra was Jyeṣṭhā. The nakṣatra Śravaṇā is only four nakṣatra, in advance of Jyeṣṭhā. Taking one day approximately the time for the moon, to cross one nakṣatra, she will require only 4 days, to reach Śravaṇā, from Jyeṣṭhā. So, she should reach Śravanā on the 5th

[26] *Mahābhārata*, Śalya Parva, Ch. 34 Verse 6.

day of the war and on the last or the 18th day, she aught to be in Punarvasu or Puṣya which is ahead of Jyeṣṭhā, by 17 nakṣatras. Hence, it is evident, that the statement of Baladeva as interpreted above cannot be accepted, as being antagonistic to the other evidences.

But the verse admits of another and a more sensible interpretation. We are to note here, that the words पुष्येण and श्रवणे have different case endings. In श्रवणे we have the 7th case ending, but in पुष्येण it is the 3rd. In expressing the month, the tithi or the nakṣatra, in which something happens or is done, the 7th case ending is most commonly used, with the names of the months and the like, such as :—

माघे मासि, शुक्ले पक्षे, नवम्यां तिथौ, विशाखायां नक्षत्रे etc.

पुष्येण in the sense, *in the nakṣatra Puṣya*, is unusual and is seldom used; it is particularly so when a length of time is indicated by one of them in the expression. Besides, the use of different case-endings in the same sentence for expressing the same sense i. e. the sense of " in the nakṣatra " is very rare and inconsistent. So, we suspect some other meaning to have been attached to it.

The verse mav be split up into 3 (three distinct) parts—

(*a*) चत्वारिंशदहान्यद्य द्वे च मे निःसृतस्य वै पुष्येण,

(*b*) संप्रयातोऽस्मि श्रवणे,

(*c*) पुनरागतः,

That is, (*a*) gives the sense " To-day is the forty sencond day of my sojourn or pilgrimage *with* Puṣya".

(*b*) " I went out *in* the nakṣatra Śravaṇa."

(*c*) " I have now come again back to you."

In this arrangement, the 3rd case ending to Puṣya, in the 1st part, is grammatically correct by the rule अध्वकालाभ्यां अपवर्गे तृतीया; by the term अपवर्ग is meant the

completion of an action in respect of time or space. According to the rule, the 3rd case ending should be applied to the word by which the completion is effected. Here 42 days' journey is completed with पुष्य. Hence, by the rule the 3rd case ending should be applied to it. That is why we have पुष्येण in the verse and not पुष्ये which would signify *in* Puṣya. Had the author of the *Mahābhārata* intended to express "in Puṣya" he might have used पुष्ये instead of पुष्येण.

In this light, the translation of the verse should be as follows :—

Our translation.—Today, the forty second tithi (lunar day) of my pilgrimage has been completed with the nakṣatra Puṣya ; for I went out in the nakṣatra Śravaṇā ; now I have come again, back to you.

The word "Punaḥ" is significant. It expresses the fact that Baladeva had met the Pāṇḍavas in another Puṣya during his pilgrimage ; for, he started in the previous Śravaṇā, 42 tithis before the last day of the war, and a few days before Kṛṣṇa started for Hastināpura on peace mission

Unlike other statements, here is an attempt, to suppor the statement by an argument, as if there was somebody to question the validity of the statement. From this, it appears that Baladeva gave his own calculation. He based his statement on the fact, that 42 tithis were nearly equal to 42 nakṣatras (of the system of 28 nakṣatras, then in vogue) 42 tithis=one synodic revolution of the moon of 30 tithis and 12 additional tithis and 42 nakṣatras=one sidereal revolution of the moon of 28 nakṣatras, and additional 14 nakṣatras. On the day of Baladeva's departure, the tithi was the Śukla 7th, and on his return it was Kṛṣṇa 3rd $7+41=48=30+18$. It was the eighteenth tithi or Kṛṣṇa third. Similarly, on his day of departure the nakṣatra was Śravaṇā, which numbered 28, with Dhaniṣṭhā being taken as one. $28+41=69=28\times2+13$. The thirteenth nakṣatra from

Dhaniṣṭhā is Puṣya. So, it was said that the 42nd tithi of Baladeva's pilgrimage was completed by Puṣya, for he departed *in* Śravaṇā.

Thus, we see that the statement of Baladeva is quite in agreement with other statements in connection with the Bhārata battle.

According to this, Baladeva started on the 4th October 1432 B. C. As the statement has been very roughly put and intended for approximate value, we use for our calculation below, only the mean positions of the sun and the moon, which were, as given below :

Date of departure of Baladeva (4th October 1432 B. C.)

Mean Moon	..	254	17	20	at Mean noon
Mean Sun	..	179	48	10	" "
Difference	..	74	29	16	= 74.4878

Mean Tithi $= \frac{74.4878}{12} = 6.2073 =$ Śukla 7th

Nakṣatra Mean Moon	..	254	17	26
Add	..	91	10	
		345	27	26
Śravaṇā begins at	..	347	8	34
		1	41	12

The mean nakṣatra Śravaṇā begins at 3^h 18^m p. m.

Date of Return of Baladeva (13th Novr. 1434 B. C.)

At Mean Noon

Mean Moon	..	61°	20′	47″
Mean Sun	..	219	13	43
Difference	..	202	7	4 = 202°.1178

Mean Tithi $= \frac{202.1178}{12} = 16.831$

Kṛṣna 2nd. But Kṛṣṇa 3rd. begins at 3^h. 31^m. p. m.

Naksatra.

Mean Moon	..	61°	20′	47″
Add	..	91	10	
	..	152	30	47
The nakṣatra Puṣya begins at	..	154	17	9
Difference	..	1	46	22

$$\frac{1\ \ 46\ \ 22}{13\ \ 20} \times 24 = 3h.11m.$$

The nakṣatra Puṣya begins at $3^{h}.\ 11^{m}$. p. m.

All this shows that Baladeva departed in the afternoon of 4th October 1432 B. C. when the tithi was Śukla seventh and nakṣatra was Śravaṇā and returned in the afternoon of the 13th November, 1432 B. C. when the tithi was Kṛṣṇa 3rd and the nakṣatra, Puṣya. Hence, the requirements in this case also are satisfied.

It may be remarked here that the interpretation by Nīlakaṇṭha supports the antagonistic theory of the *Bhārata Sāvitrī*, as will be shown, when we take up the question of the *Bhārata Sāvitrī*, later on.

If we accept the view that both the interpretations are equally correct, still then the preference given by Nīlakaṇṭha to that which goes against the statements of Kṛṣṇa and Bhīṣma but supports the *Bhārata Sāvitrī*, must be looked upon with an eye of suspicion.

We have considered 9 evidences from the *Mahābhārata*. They have been utilised by other scholars as well, but with different results. The how and why of this have been explained above at some length. We also, have used them and got our result as 1432-31 B. C. for the date of the Bhārata war without introducing any change into them. The calendar for this year, based on the Modern Astronomy tallies well with that of the *Mahābhārata* regarding tithis, nakṣatras, solstice day and the like. So this year (1432-31 B. C.) may be presumed to be the correct year of the war.

F. 5

Limits to the Date of Bhārata war

But we cannot still accept this date at present, unless and until, we can shew that this and no other year, is possible for the Bhārata war. This date has been arrived at by starting with the *assumption*, that the sun was at or very close to the star Jyeṣṭhā in the year of the war and in fact, the sun was behind the star Jyeṣṭhā, by only 33″ in the year 1432 B. C. in the amāvasyā, as in Kṛṣṇa's statement. But we have seen before that the exact position of the sun in the nakṣatra has not been specified in that statement. In the absence of this, we may be free to take the sun to be situated at any point of the naksatra Jyeṣṭhā with the consequence that the date of the Bhārata war might fall anywhere between the limits 1370 B. C. and 2338 B. C. So the question may, for the present, be left open.

The evidences discussed above, do not help us in this matter. We have to look for further evidences which might narrow down the above limits and ultimately, lead us to a single date. If this date comes in agreement with our finding (1432-31 B. C.), we shall then, be entitled to accept it as the correct date, for the Bhārata war.

We are going to consider some such evidences from the Vedas, the *Mahābhārata* and other sources. They are expected to throw, further light on the question at issue, and furnish us with anterior and posterior limits to the time of the Bhārata war.

Vedic evidences

In the Vedic times and for a long time afterwards the years were based on seasons[27] and sacrifices were performed and regulated accordingly. Hence, the years were then tropical.

In the time of *Ṛgveda*, there might have been grouping of stars into constellations or nakṣatras, but commonly

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[27] RV. 2.37. 1-3, 1.15, 12, 1-15, 1, 4. 32.2 etc.

the conjunctions of the sun or the moon were referred to the individual stars. But, later, in the time of the *Yajurveda*, the Zodiac was rigidly divided into 27 parts called the Gandharvas[28] or nakṣatras. At the time of *Kṛṣṇa Yajus*, the divisions were complete and references in most cases were to the nakṣatras and not to the individual stars.

The year in the Vedic times, began always from either equinoxes or solstices. Mention is nowhere found of the year ever beginning from any point other than the equinoxes or solstices.

Kṛṣṇa Yajus and Kṛttikā period.

Kṛṣṇa Yajus (*Taittirīya Saṁhitā*) gives a complete list of nakṣatras[29] and so also the *Taittirīya Brāhmaṇa*[30] and the *Atharva Veda*[31]. All these lists begin with the nakṣatra Kṛttikā, showing that the year then began with the equinox in Kṛttikā.

There is a group of very small stars (Pleiades) towards the end of the nakṣatra Kṛttikā. They were known as the Kṛttikās. The group appears to consist of 6 or 7 stars. By tradition, the Kṛttikās were wives of seven Ṛṣis (the seven stars of the Ursa Major). The nakṣatra Kṛttikā was spoken of as seven headed and considered to be the head of the Yajña or the year, and belonging to the divinity Agni.[32]

Kṛttikā (nakṣatra) extends over a space of 13° 20 and the period, in which it was crossed over by the Vernal, equinox, was about 1,000 years. The remotest and the nearest limits of this period are respectively 2,560 B. C. and 1,589 B. C.

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28 *Śukla yajus*, 9.7, *Kṛṣṇa Yajus*, 1, 7, 7.

29 *Kṛṣṇa Yajus*, 4.4.10.

30 *Taittirīya Brāhmaṇa*, 1. 5. 1.

31 *Atharva Veda*, 19.7.1-5.

32 *Kṛṣṇa Yajus*, 5.1.7., *Śatapatha Brāhmaṇa*, 2.1.2.

N. B. We shall have occasion, here and later on; to express positions of stars and the beginnings and the ends of naksatras from the equinox of 499 A.D. In such cases, we shall put the number 499 within the brackets after the longitude referred to 499 A. D.

Nearest limit of the Kṛttikā period

When the vernal equinox was at the first point of Kṛttikā, the southern solstice was at the end of the first quarter of Dhaniṣṭhā (following the system of 27 nakṣatras). Assuming β Delphini to mark the first point of Dhaniṣṭhās we have—

Longitude of the first point of Dhaniṣṭhā ..	295°	29′	(499)
Add $\frac{1}{4}$ of a nakṣatra ..	3°	20′	
Longitude of southen solstice with equinox was at Kṛttikā ..	298	49	(499)
Longitude of southern solstice referred to the equinox of date ..	270		
Precession in the interval upto 499 A.D. ..	28	49	

The interval to 499 A. D. taking Prec.

$$\text{rate}=49.7124=\frac{28^\circ \quad 49'}{49''.7124}$$

$$=2087 \text{ years}$$

∴ The date when equinox was at the beginning

of Kṛttikā $=499-2087$

$=-1588$ A. D.

$=1589$ B. C.

The remotest date 2560 B. C. also can be found similarly.

After 1589 B. C. the vernal equinox stepped into the nakṣatra Bharaṇī.

An Astronomical reform in the Mahābhārata

There is a statement in the *Mahābhārata*, in which Mārkaṇḍeya, a great sage, is said to have narrated the story of the Kṛttikās to Pāṇḍavas, in the presence of Vyāsadeva, when they were in exile. It purports to say that the vernal

equinox had then shifted from the nakṣatra Kṛttikā to the nakṣatra Bharaṇī, but added that the Kṛttikā had been granted a fresh lease of heavenly life by inclusion of Abhijit in the System of nakṣatras. This would prove that the time of Yudhiṣṭhira, to whom all this was said, was posterior to the time when the vernal equinox just crossed the first point of the nakṣatra Kṛttikā and entered into the nakṣatra Bharaṇī, that is, to 1589 B. C. the nearest epoch of the Kṛttikā period.

Mārkaṇḍeya's statement runs as follows :—

श्रिया जुष्टं महासेनं देवसेनापतिं कृतम्।
सप्तर्षिपुत्राः षड्देव्यस्तत् सकाशमयागमन् ॥

ऋषिभिः संपरित्यक्ता धर्मयुक्ता महाव्रताः।
द्रुतमागत्य चोचुस्ता देवसेनापतिं प्रभुम् ॥

वयं पुत्र परित्यक्ता भर्तृभिः देवसम्मितैः।
अकारणात् रुषा तैस्तु पुण्यस्थानात् परिच्युताः॥

अस्माभिः किल जातस्त्वं इति केनाप्युदाहृतम्।
तत् सत्यमेव सश्रुत्य तस्मान्नस्त्रातुमर्हसि ॥

अक्षयश्च भवेत् स्वर्गस्त्वत् प्रसादाद् हि नः प्रभो।
त्वा पुत्र चाप्यभीक्ष्यामः कृत्वैतदनृणो भव ॥

स्कन्द उवाच—

मातरो हि भवत्यो मे सुतो वोहमनिन्दिता।
यद् वाभीच्छत तत् सर्वं संभविष्यति वस्तथा ॥

विवक्षतं ततः शक्रं किं कार्यमिति सोऽब्रवीत्।
उक्तं स्कन्देन ब्रूहीति सोऽब्रवीद् वासवस्तथा ॥

अभिजित् स्पर्धमाना तु रोहिण्यां कन्यसी स्वसा।
इच्छन्तो जेष्ठतां तात तपस्तप्तुं वनं गता।

तत्र मूढोऽस्मि भद्रं ते नक्षत्रं गगनाच्च्युतम्।
कालं त्विमं परं स्कन्द ब्रह्मणा सह चिन्तय ॥

धनिष्ठादि तदा कालो ब्रह्मणा परिकल्पितः।
रोहिणी ह्यभवत् पूर्व्वं एवं संख्या समाभवत् ॥

एवं उक्ते तु शक्रेण कृत्तिकास्त्रिदिवं गताः।
नक्षत्रं सप्तशीर्षाभं भाति तद वह्निदैवतम् ॥

Translation.—The six Divine Ladies (Kṛttikās=Pleiades,) the wives of the seven Ṛṣis (Ursa Major) came to Mahāsena (Skanda), who had been made the Commander-in-Chief of the Devas and was blessed with Fortune. They were highly pious and religious, but had still been deserted by their husbands. On coming to the Lord of the Deva armies, they said to him " We, O Son, have been deserted by our Divine but angry husbands and displaced from our holy and rightful place. They (the husbands) heard from some body, that you had been born of us. Now rescue us from this calamity. By your grace, O Lord ! we may have eternal heaven. We wish you to be our son. Get discharged of your debt by doing this." Skanda said, " O Blameless Ones ! you are my mothers and I am your son ; so whatever you desire will be done". Seeing Sakra about to say " What is to be done ", Skanda told him to speak out. On this Śakra said " Abhijit, the younger sister to Rohiṇī(Jyeṣṭhā) got envious of her (Rohiṇī) and desirous of attaining the position similar to her (place in the system of nakṣatras) went out to the forest for penance. I am confounded again to see that your auspicious nakṣatra (Kṛttikā) has been displaced from its position in the heavens. So O Skanda ! find out a solution of (change in) Kāla (time) (that would be affected by the proposed restitution of Kṛttikā and the inclusion of Abhijit in the nakṣatras), in consultation with Brahmā". On this (that is, after the consultation), Brahmā made the number of naksatras *even* (by admitting Abhijit into the already existing system of naksatras, the number of which was *odd*, being 27), ordained the Kāla (time) to be taken in reference to the beginning of the nakṣatra Dhaniṣṭhā, and thus caused a shifting of Rohiṇī (Jyeṣṭhā star) towards the east. On seeing their demand satisfied, the Kṛttikās went back to the heaven and the seven headed nakṣatra Kṛttikā (the divinity of which was Agni or Fire) continued to shine in the skies as before.

The above passages have been taken notice of, by scholars of Ancient Indian History, among whom may be mentioned the names of Professor P. C. Sen Gupta and the

late Dr. R. Sham Sastri. Both of them omitted, in their quotations, the first seven verses.

In verse 9, we have भद्रं ते नक्षत्र गगनाच्च्युतम् as spoken of by Śakra to Skanda. Dr. Sastri took it to mean "Your nakṣatra Bhadrā (or Pūrvabhādrapada) has been displaced from the heavens". It is clearly inadmissible that ते नक्षत्रं means nakṣatra of Skanda i. e. the nakṣatra Kṛttikā and not Bhādrapada. Skanda was the assumed son of the Kṛttikās. The Kṛttikās being six in number (verse 1) the surname of Skanda was Ṣaḍānana (six faced), besides Skanda was also named as Kārtikeya being the son of the Kṛttikās (verse 3). Again the Kṛttikās, and not the Bhādrapada, said that they had been displaced from heaven (verse 3) and wanted to be reinstated (verse 4) and went back to the heavens when this demand was satisfied (verse 11). So naturally, the nakṣatra Kṛttikā belonged to Skanda and that is why Śakra said to Skanda that your nakṣatra had been displaced from the heavens. The word *Bhadram* is evidently an adjective to the word *nakṣatram*, meaning 'noble or auspicious' and nothing else.

The same reason is applicable to the interpretation of Professor P. C. Sen Gupta who takes ते नक्षत्रं to mean *Abhijit*. But Abhijit has no earthly connection with Skanda and hence, cannot be called the nakṣatra of Skanda. Besides, nowhere in the verses is stated, that Abhijit was ever displaced. Again, Abhijit was not a nakṣatra at all before this. She was only striving for getting into the list of nakṣatras. Moreover, the interpretation of Professor Sen Gupta goes against the statements, made in the verses from 1 to 7 and in 11.

Divested of allegory, the plain meaning of the passages seems to be as follows :—

People were accustomed, in the Kṛttikā Period to see the vernal equinox to be always associated with the nakṣatra Kṛttikā. Now when the Vernal Equinox crossed

the first point of Kṛttikā and shifted backward into Bharaṇī, they still wanted to retain the association of Kṛttikā with the vernal equinox and to get the first of Kṛttikā to be extended backward by some make-shift, if possible. A school of Astronomers of the time favoured this and the idea was put into effect by inclusion of Abhijit, into the previous system of 27 nakṣatras as an additional nakṣatra, making the system thereby to consist of 28 nakṣatras.

The addition of a nakṣatra would necessarily change the configuration of the former system. Time was expressed in those days in terms of tithis and nakṣatras, i. e., by the positions of the moon and the sun, in respect to the nakṣatras · Now the question arose how one was to know when a particular nakṣatra would exactly commence or end, in the present system; for this purpose, the first point of Dhaniṣṭhā, in the new system of 28 nakṣatras was kept indentical with that of the older system of 27 nakṣatras. The beginnings and the ends of the other nakṣatras were then taken at equal distances of $\frac{90^\circ}{7}$ per nakṣatra, along the circle of the ecliptic. Thus when the first point of Dhaniṣṭhā was fixed, the beginnings and the ends of the other nakṣatras and also the corresponding times of the entry of the moon and the sun therein got automatically fixed. This is why it has been stated that धनिष्ठादि तदा कालो ब्रह्मणा परिकल्पितः[33]।

In the table, in the appendix A, have been given the distances of the beginnings and the ends of all the nakṣatras, of both the old and the new system from the first point of Dhaniṣṭhā. In order to ascertain, the actual longitudes of the beginning and the end of a particular nakṣatra, we have only to add the distances of these points (as given in the table) to the longitude of the first point of Dhaniṣṭhā. The results would then be the required longitudes.

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[33] Verse 10.

Looking at the table it will be seen that by this arrangement, the longitude of the end of the third quarter of Bharaṇī of the old system has become identical with that of the first point of Kṛttikā of the new system. For these points are at a distance of 90° from the first point of Dhaniṣṭhā. This shows that, by this change, the nakṣatra Kṛttikā has been extended by $3\frac{1}{3}°$ only. That is, Kṛttikā has been, as it were, granted an extension of heavenly life for about 242 years, the time that would be taken by the vernal equinox to pass over 3°$\frac{1}{3}$ by precession.

Let us see how it has affected the star Rohiṇī (Jyeṣṭhā) Antares). *In the old system*,

The longitude of the *star* Jyeṣṭhā ..	228°	54′	(499)
The longitude of the first point of Dhaniṣṭhā Less. ..	295	29	(499)
Distance of the star Jyeṣṭhā from 1st point of Dhaniṣṭhā ..	293	25	(499)
Beginning of the *nakṣatra* Jyeṣṭhā in old system (from Table) ..	293	20	
	0	5	

This shows that the *star* Jyeṣṭhā was only 5′ in advance of the beginning of the *nakṣatra* Jyeṣṭhā in the old system.

According to the new system the longitude of the beginning of nakṣatra Jyeṣṭhā ..	282	51	26
Longitude of the star Jyeṣṭhā (as above)	293	25	
The distance of the star Jyeṣṭhā from the first point of Dhaniṣṭhā (new system)	10	33	34

This shows that by the new arrangement the star Jyeṣṭhā (Rohiṇī) has been shifted towards the east by more than $\frac{3}{4}$ of a nakṣhatra. So it has been stated in verse 10, that रोहिणी ह्यभवत् पूर्व्यम् .

We have seen, that by the inclusion of Abhijit, in the former system of nakṣatras, an extension of only $3\frac{1}{3}°$

was obtained for the first point of Kṛttikā. The method adopted, for getting this extension, cannot further be applied to get a further extension. When the equinox would cross the limiting position (i. e. the end of the third quarter of Bharaṇī in the old system), the vernal equinox would cease to be even in this extended portion of Kṛttikā and get separated from the Kṛttikā for good, and then, in the language of the verse, it would be permanently displaced from the heaven, without any further possibility of its ever getting back to it. We can find the time when the vernal equinox left Kṛttikā finally as follows.

Longitude of 1st point of Dhaniṣṭhā ..	295°	20′ (499)
Long. of 1st point of Dhaniṣṭhā from equinox at 1st point of Kṛttikā (new system)..	270°	0′
Precession in the interval ..	25°	29′

With Precesional rate 49″.739, the interval

$$=\frac{25\ 29}{49\ 739}=1845 \text{ years}$$

∴ The required date when vernal equinox crossed the 1st point of Kṛttikā (new system) .. 499-1845

= - 1346 A.D.=1347 B. C.

In Mārkaṇḍeya's statement, we have seen that Kṛttikā was displaced (1589 B. C.) but reinstated i. e. the vernal equinox crossed the first point of Kṛttikā in the old system of 27 naksatras but by introducing Abhijit in the old system, it was possible to get an extension of Kṛttikā by $3\frac{1}{3}$°. At the time, when Mārkandeya spoke to Yudhiṣṭhira, the vernal equinox was still in this extended portion.

Therefore it is evident that the time of Yudhiṣṭhira was between *the limits* 1347 *B. C. and* 1589 *B. C.*

We may draw some important inferences from what has been discussed above—

(1) The extension of the nakṣatra Kṛttikā to the end of the third quarter of Bharaṇī, by the inclusion

of Abhijit, presupposes the knowledge, on the part of the astronomers of the time, of the slow motion of the equinoxes or solstices, towards the west.

In Vedic texts[34], we come across statements showing that the star Aldebaran (Rohiṇī) once occupied the vernal equinox, when the then southern solstice was at the star Śatabhiṣā. This fact as well as the previous shifting of the vernal equinox from Aldebaran (Rohiṇī) to the first point of Kṛttikā (of the old system) were also known to the astronomers of the time of Yudhiṣṭhira.

Later, we have references of the vernal equinox to have reached the end of the third quarter of Bharaṇī, with the corresponding shifts of the northern and southern solstices to the middle of Aśleṣā and the beginning of Dhaniṣṭhā respectively[35] and still later, of the shift of the northern solstice to Punarvasu (Geminorum or Castor) in *Pañca-Siddhāntikā* of Varāha[36].

We do not know for certain what particular rate of motions the ancient astronomers assigned, to the precession; but it may be assumed, from the fairly advanced system of calendar of events recorded in the *Mahābhārata*, that it was not very far from the correct value.

(2) Abhijit was admitted into the system of nakṣatras only to produce a shift of $3\frac{1}{3}°$ to the first point of Kṛttikā. So its function was over, when the vernal equinox reached this limit in 1347 B. C. It appears likely that it was then discarded and the older system of 27 nakṣatras was again reverted to. Abhijit had thenceforward only a historical interest and was looked upon and used as such in the Puranas and other works, in later times.

Assuming the system of 27 nakṣatras to have been in use at the time of Yudhiṣṭhira, we arrived at the limits

[34] *RV.* Mandals 2 and 3.

[35] *Baudhāyana Śrauta Sūtra* 2.6-29

[36] Ch. 3,21.

for the Bharata war as 1370 B. C. and 2338 B. C.[37]. But from the discussions of the statement of Mārkaṇḍeya, we learn that the system of 28 nakṣatras (new system) was in vogue at the time and not the system of 27 nakṣatras (the old system). So when speaking of nakṣatra Jyeṣṭhā, in which the sun was, on the first day of the war, Kṛṣṇa must have meant it, to be of the new system, as was then prevalent.

As the beginning and the end of the nakṣatra Jyeṣṭhā in the new system differed widely from those in the old system, the corresponding time-limits in the former, must, of necessity, differ equally so from those in the latter and in fact, the limits to the date of the Bhārata war in the new system, are as 678 B. C. and 1604 B.C. This is explained below :—

Limits to the date of Bhārata war (New System)

Distance of the beginning of Nakṣatra Jyeṣṭhā from 1st of Dhaniṣṭhā ..	282	51	Dist. of end of Jyeṣṭhā from 1st pt. of Dhaniṣṭhā	295	43
Long. of 1st pt. of Dhaniṣṭhā ..	295	29 (499)	Long. of 1st pt. of Dhaniṣṭhā ..	295	29 (499)
Add.	578	20	Add	591	12
Deduct ..	360	0	Deduct ..	360	0
Long. of beginning of Jyeṣṭhā	218	20 (499)	Long. of end of Jyeṣṭhā ..	231	12 (499)
Ch. in app. long. of sun in 61 days about	68	0	Ch. in app. long of sun in 67 days. about ..	68	0
Long. of southern solstice	286°	20′ (499)	Long. of southern solstice ..	299°	12′ (499)
Southern solstice from equinox of date	270		Southern solstice from equinox of date ..	270	

[37] Page 18.

Limits to the date of Bhārata war (New System)—(*continued*)

∴ Precession to 499 A.D.	16° 20′	∴ Precession to 499 A.D.	29° 12′
Assuming Pre. 1° per 72 years	..	Assuming Pre. 1° per 72 years.	..
The interval to 499 A.D.	1176 years	The int. to 499 A.D.	2192 years
Deduct from ..	499	Deduct from ..	499
Corresponding dates of Bhārata war.	−677 A.D.	Corresponding date of Bhārata war.	1693 A.D.
Nearest limit ..	=678 B. C.	Remotest limit ..	1694 B. C

Therefore, it is evident that the longitude of the southern solstice in 678 B. C. was 286° 20′ (499) and that in 1694 B.C. was 299° 12 (499). Hence, the southern solstice was behind the first point of Dhaniṣṭhā, in 678 B. C., by 295° 29′–286° 20′ or 9° 9′ This shows that it was then in the nakṣatra Śravaṇā. In 1694 B. C. the longitude of the southern solstice was in advance of the 1st point of Dhaniṣṭhā by 299° 12′–295° 29 or 3° 43′ i. e. it was then a little beyond the 1st quarter of Dhaniṣṭhā.

As the new system was introduced in 1589 B. C. and the time of Yudhiṣṭhira was later than that we need not consider dates beyond 1589 B.C. We have now to see which year after 1589 B. C. conforms completely with the requirements, as indicated in the evidences of the *Mahābhārata*, for the year of the Bhārata war.

It is not necessary to test all the years, from 1589 B. C. to 1431 B. C.; for, the tithis recur at the interval of every 19 years. We have seen that the year. 1432-31 B. C. agrees perfectly with the requirements. So, it would be enough to try only those years which are at intervals of 19 years from 1431 B.C. backwards.

We shall take up and try for only two dates from each of these years viz. (1) The day of Bhīṣma's expiry and (2) the first day of the war.

The requirements for the first of these days, are that the southern solstitial passage and the middle of Śukla eighth, should take place at or before the noon of that day, as Bhīṣma is considered to have died in the afternoon of that day. The requirements for the second of these dates are that the day must be an Amāvāsyā day and that the day must begin with Amāvāsyā at sunrise of that day, as was customary to name a civil day by a tithi.

If any year fails to satisfy these requirements it must have to be rejected.

The following table gives all the details required, with reasons as to why they had to be rejected.

Possible years of Bhārata war (between 1431 *B.C. to* 1589 *B.C.)*

Years		Day of Bhīṣma's expiry	First day of war	Reasons for rejection
1583 B. C.	Date	3rd. Jan. 1583 B. C.	28th Oct. 1584 B. C.	On the 1st day of the war tithi is Śukla 1st instead of Amāvāsyā as required.
	App. Moon	359.35	208.82	
	App. Sun	268.87	201.61	
	Difference	90.48	7.21	
	Tithi ..	7.54	0.6011	
		Śukla 8th.	ukla 1st.	
1564 B. C.	Date	3rd Jan. 1564 B. C.	28th Oct. 1565 B. C.	Solstitial passage was after Sunset and the tithi Śukla 9th. on the 1st day of the war tithi was Sukla 1st.
	App. Moon	8°.34	211°.51	
	App. Sun	270.27	202.00	
	Diff. ..	98.97	10.51	
	Tithi ..	8.067	29.60	
		Sukla 9th.	Sukla 1st.	
1545 B. C.	Date	3rd Jan. 1545 B. C.	28th. Oct. 1546 B. C.	Solstitial passage after midnight. So S.S. is on 4th when tithi Sukla 9th completed at noon.
	App. Moon	6°.46	196°.58	
	App. Sun	269.65	201.33	
	Diff. ..	96.81	355.25	
	Tithi ..	8.067	29.6c	
	=	Sukla 9th.	Amavasya	

Possible years of Bharata War (between 1431 B.C. to 1589) B.C.—*contd.*

Years		Day of Bhīṣma's expiry	First day of War	Reasons for rejection
1526 B. C.	Date	3rd Jan. 1526 B. C.	28th. Oct. 1527 B. C.	Tithi on S. S. day was Sukla 9th.
	App. Moon	11°.94	196°.80	
	App. Sun	270.04	201.77	
	Diff. ..	101.90	355.03	
	Tithi ..	8.49	29.69	
	=	Sukla 9th.	Amāvāsyā	
1507 B. C.	Date	2nd Jan. 1507 B. C.	27th. Oct. 1508 B. C.	1st day of War begins with Kṛṣṇa 14th and not Amāvāsyā.
	App. Moon	359°.35	189°.10	
	App. Sun	269.45	201.14	
	Diff. ..	89.90	347.96	
	Tithi ..	7.49	28.99	
	=	Sukla 8th.	Kṛṣṇa 14th.	
1488 B. C.	Date	2nd Jan. 1488 B. C.	27th Oct. 1489 B. C.	S. S. passage takes place after midnight. So the next day is S. S. day when the tithi was 9th
	App. Moon	357°.93	198°.80	
	App. Sun	269.72	201.53	
	Diff. ..	88.21	357.26	
	Tithi ..	7.35	29.77	
	=	Sukla 8th.	Amāvāsyā	
1469 B. C.	Date	3rd. Jan. 1469 B. C.	28th. Oct. 1470 B. C.	1st day of war falls on śukla 1st instead of on Amāvāsyā.
	App. Moon	357°.32	205°.82	
	App. Sun	270.21	201.93	
	Diff. ..	87.11	3.89	
	Tithi ..	7.26	0.24	
	=	Sukla 8th.	Sukla 1st.	
1450 B. C.	Date	2nd. Jan. 1450 B. C.	27th. Oct. 1451 B. C.	Tithi on S. S. day was Sukla 7th on 3rd Jan. 1st day of War falls on tithi Sukla 1st.
	App. Moon	351°.84	208°.81	
	App. Sun	269.60	201.61	
	Diff. ..	82.24	7.30	
	Tithi ..	6.85	0.61	
	=	Sukla 7th.	Sukla 1st.	

We may try two possible years after 1431 B. C. though there is no necessity for it. For, it would then take us to the time of Parikṣit, the grandson of Arjuna, as will be presently seen in our next discussion on the north Solstitial Colure, for the time.

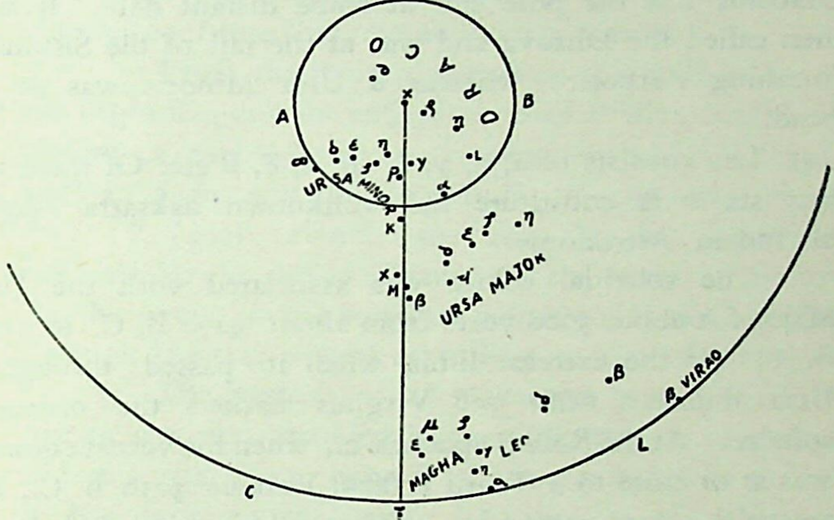
Possible years of Bhārata War after 1451 B.C.

Year		Day of Bhīṣma's expiry	First day of War	Reasons for rejeetion
1412 B. C.	Date	2nd. Jan. 1412 B. C.	27th. Oct. 1413 B. C.	S. S. day on Śukla 9th.
	App. Moon	10°.13	198°.90	
	App. Sun	270.38	202.09	
	Diff. ..	99.75	356.81	
	Tithi ..	8.32	29.73	
	=	Śukla 9th.	Amāvāsyā	
1393 B. C.	Date	2nd. Jan. 1393 B. C.	27th. Oct. 1394 B. C.	S. S. day on 3rd. Jan. 1393 B. C. and tithi on this day is 9th (Śukla), Tithi on the 1st day of War is Kṛṣṇa 14th, Amāvāsyā began at noon.
	App. Moon	3°.27	189°.25	
	App. Sun	269.77	201.47	
	Diff. =	93.50	347.78	
	Tithi ..	7.79	28.98	
	=	Śukla 8th.	Kṛṣṇa 14th.	

From the above results, it appears that no year other than 1432-31 B. C. is possible for the Bhārata war. *So, it may now be aceepted as the correct date of the Bhārata war.*

Maghā Saptarṣi Rekhā (Solstitial Colure)

To facilitate a clear understanding of the subject under discussion, a star map is given below.—



Solstitial Colure in Parikṣit's time

It represents a portion of the sky, north of the ecliptic containing the constellations, Ursa Minor, Ursa Major, Draco and Leo.

The arc CL represents the ecliptic and X, the pole of the ecliptic. AB represents the circle (Polar circle) along which the celestial pole (the pole of the celestial equator) gradually shifts towards the West.

Ursa Major consists of stars α, β, γ, δ, ϵ, ζ and η. It is known as Saptarṣi in Sanskrit Literature and in Indian Astronomy.

Draco consists of the stars λ, κ, α, ι, η, ζ, β, γ and δ. The pole X of the ecliptic is, about, the middle of the stars ζ and δ. Formerly, this constellation, without the stars λ and κ, was known by the name of Uttānapāda.

Ursa Minor consists of α, δ, ε, ζ, β, γ and η. The star α is the present celestial pole. Formerly, this constellation, with k Draconis, formed the well-known constellation Śisumāra of the Ancient Sanskrit Literature. k Draconis was the pole star at some distant date. It was then called the Dhruva and was at the tail of the Śiśumāra (meaning Porpoise) whereas α Ursa Minoris was at its head.

Leo consists of α, η, γ, ζ, .μ, ε, δ, β etc. Of these the first six stars constitute the wellknown nakṣatra Maghā of Indian Astronomy.

The solstitial colure was associated with the Ursa Major for about 3000 years from about 4270 B. C. to 1260 B. C. At the extreme limit, when it passed through η Ursa Majoris (मरीचि), β Virginis marked the northern solstice. At the Rohiṇī epoch, i. e., when the vernal equinox was at or close to α Taurii (रोहिणी) about 3050 B. C., the solstitial colure passed by α Draconis (the then Pole Star), ε Ursa Majoris (अंगिरा) and δ Leonis (पूर्वफल्गुनी). In 2328 B. C. the colure passed through α Lonis (the star मघा) and by γ Ursa Majoris (पुलस्त्य) and δ Ursa Majoris (अत्रि). The colure passed through ε Leonis and β Ursa Majoris (पुलह), when the equinox was at the beginning of the nakṣatra Kṛttikā (of the old system i. e. of 27 nakṣatras). It passed out of Ursa Major by α Ursa Majoris in about 1260 B. C.

References are available in the *Ṛg-Veda* (mainly in the 2nd and the 3rd Maṇḍalas) of the then pole star, the solstice and the solstitial colure passing through ε Ursa Majoris (अंगिरा).

Atharva-Veda gives a list of nakṣatras. The list contains 28 nakṣatras, including Abhijit and begins with Kṛttikā, as in *Kṛṣṇa-Yajur-Veda*. In connection with the nakṣatra Maghā, it says अयनं मघा मे. This means that, the solstitial colure then passed through Maghā. As the list is

concerned with the nakṣatras only and not the stars, the extract simply means that the solstitial colure then passed through some point of the *nakṣatra* Maghā. It did not mean the star Maghā.

That the star Maghā has not been intended here, will be confirmed by the following reasons:

(1) From the table (Appendix B), it will be seen that the beginning and the end of the constellation Maghā in the system of 28 nakṣatras are repsectively 115° 29′ (499) and 128° 20′ (499) and the longitude of the star Maghā is 128° 58′ (499). Hence, the *star* Maghā is outside the *nakṣatra* Maghā and in advance of the latter by about 39′. So, the Ayana or the solstitial colure could not have passed through the star Maghā according to the *AtharvaVeda*.

(2) The system of 28 nakṣatras was started when Abhijit was first included in the older system of nakṣatras and this was about 1589 B. C. and not before that date, as has been shown before. So the list of nakṣatras in the *Atharva Veda* which follows the system of 28 nakṣatras must have been written and inserted into the main body on or after this date. In 1589 B. C. the position of the solstitial colure was at 118° 49′. The colure then passed through ϵ Leonis and β Ursa Majoris. This position was then behind the star Maghā (α Leonis) by 128° 58′-118°49 or 10°9′. We have already seen that the time of Yudhiṣṭhira was posterior to 1589 B. C.; hence, the position of the northern solstitial colure in his time must have been still further back.

The statement of *Atharva-Veda* regarding the solstitial colure ever passing through the nakṣatra Maghā seems to be the first. There is no other earlier record available connecting Maghā with the solstitial colure. Later on, other writers also referred to it. But no where do we find any reference to the colure passing through the *star* Maghā in Yudhiṣṭhira's time.

When Varāha Mihira said—

आसन् मघासु मुनयः शासति पृथ्वीं युधिष्ठिरे नृपतौ

he must have meant that in the time of Yudhiṣṭhira the solstitial colure passed through the *nakṣatra* Maghā and not through the *star* of that name, and this is indicated by the plural inflection used with Maghā. This statement however, expresses the strong tradition in favour of the colure passing through the Ursa Major and the *constellation* Maghā (Leo) in the time of Yudhiṣṭhira. We have seen that this time cannot be earlier than 1431 B. C. and in this year the colure passed through the point 116° 39′ of the ecliptic and some point in the Ursa Major, between α Ursa Majoris and β Ursa Majoris, a little nearer to the latter.

We have a more direct and pointed statement, in many of the Purāṇas,[38] to the effect, that in the time of Parikṣit, the grand-son of Arjuna, the colure passed through the middle of the line joining the stars α and β Ursa Majoris and by the star k Draconis, the then Polestar. *Matsya Purāṇa* gives the statement as follows :—

सप्तर्षीणां च यौ पूर्व्वौ दृश्येते ह्युदितौ निशि।
तयोर्मध्ये तु नक्षत्रं दृश्यते यत् समं दिवि॥
तेन सप्तर्षयो युक्तास्तिष्ठत्यब्दशतं नृणाम्।
नक्षत्राणामृषीणां च योगस्यैतन्निदर्शनम्॥
सप्तर्षयो मघायुक्ता काले पारिक्षिते शतम्।

Translation.—The saptarṣi (the solstitial colure) lies with (along or near) the line, which joines the middle of (i. e. the point midway between) α and β Ursa Majoris which are seen to rise first, in the east and the star (k Draconis) which is in the same declination circle with the former. This

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38 1 (i) *Matsya Purāṇa* (Anandasrama edition, Ch. 274, Verse 42-44).
(ii) *Vāyu Purāṇa* (Anandasram edition. Ch. 99, Verse 421-424).
(iii) *Śrimad-Bhāgavata* (Bangabasi edition, Sk. 12 Ch. 2, Verses 27-28).

line is the indicator of the Maghā-Saptarṣi (solstitial colure passing through Maghā and Saptarṣi). It appeared to be almost stationary in the time of Parikṣit for about 100 years.

The simple meaning of this extract is (1) that at some particular time, the solstitial colure passed through the point midway between α and β Ursa Majoris, .

(2) that the colure passed by k Draconis.

(3) that when these are joined we get the indicator line for this colure (Maghā-Saptarṣi).

(4) that this was the solstitial colure at the time of Parikṣit.

(5) that the motion of the colure is so very small that it could hardly be perceptible before 100 years.

Of these, the point (1) alone, is capable of giving us the time of Parikṣit, which we shall presently use for the same purpose.

But before going into it, we may be permitted to take a passing notice of the misinterpretation of the passages done by the *Purāṇakāras* (the compilers or writers of the Purāṇas in their present form). They imagined and assumed

(1) that the solstitial colures, in different ages, would always pass through the constellation Ursa Major.

(2) that the solstitial colure would take only 100 years in crossing over each of the nakṣatras and,

(3) that the motion of the solstice would be towards the east and not to the west.

But all these assumptions are wrong.

As regards historical information, the Purāṇakāras appear to be fairly correct ; but they show, as we are constrained to say, a very miserable ignorance in matters Astronomical.

There is not the slightest hint or support in the passages quoted above, which might permit such wild assumptions to be formed. We have already seen that the astronomers of the time of Yudhiṣṭhira or of later dates were clear and definite as to the positions and the nature of the motion of the solstitial colure at different times.

The passages give a simple, correct and straightforward description of the colure and appear to have been the results of actual observation, made at the time. The authorship of the passages must go to some ancient eminent Astronomer and the Purāṇakāras only quoted him, without following the astronomical significance underlying the same. But we must say, we are really indebted to them for the preservation of this important information, the like of which is very rare to be met with.

Now, let us revert to our main theme. The point, midway between α and β Ursa Majoris has been marked in the diagram as M. X is the pole of the ecliptic. Join XM and produce it to cut the ecliptic at the point T. If the longitude of the point T happened to be 90°, at any time, from the equinox of date, then the point T would mark the then northern solstice and the line X M T would then represent the then solstitial colure. According to the extract, this was the solstitial colure, at the time of Parikṣit. From the map, it will be seen, that κ Draconis, the then Poles-tar, the longitude of which was 115° 24′ (499), was very close to it. To get the time of Parikṣit, we proceed as follow :—

Longitude of M (i. e. the point midway between α and β Ursa Majoris)	..	116° 20′ (499)
Longitude of M from equinox of date	..	90 0
Precession to 499 A. D.	..	26 20

Taking precessional rate 49″.732, the interval between the time of Parikṣit and 499 A.D.

$$= \frac{26° \ 20'}{49''.732} = 1906 \text{ years.}$$

∴ The time of Parikṣit =499-1906= – 1407 A. D.=1408 B. C. The year 1408 B. C. then comes out to be the time of Parikṣit. But remembering that the exact position of the solstice remains uncertain for about 50 years each way about the solstice according to the statement, in the extract quoted, we may take the time, as obtained above, as the approximate date of Parikṣit.

Now, it remains to be seen if the solstitial colure, in the Parikṣit's time, passed through the nakṣatra Maghā.

The longitude of X M T or the solstitial colure=116° 20′ (499). The nakṣatra Maghā (of the system of 28 nakṣa.) extends from .. .. ..115° 29′ to 128° 20 the longitude of the colure falls between these limits. Hence, it passed through the nakṣatra Maghā as required.

Professor Sen Gupta has taken notice of the above extract and remarked as follows :—

> "The compiler of the Purana wants to say that the solstitial colure passed through the middle point of the line joining α and β Ursa Majoris at the time of Parkshit. According to the above interpretation, the time of Parikshit stands at the neighbourhood of 1,400 B. C. But according to the statements of the Puranas, the Saptarsi line passed not only through the middle point of α and β Ursa Majoris, but it also passed through the middle point of the nakshatra Magha at the time of Parikshit.[39]"

Professor Sen Gupta admits that the date according to the text of the extract should be in the neighbourhood of 1400 B. .C. and we have got it as 1408 B. C. He could not accept this date, for the reason that the colure mentioned above, did not pass through the middle point of the nakṣatra Maghā. But there is nothing in the extract which might suggest that the colure line passed exactly through the middle point of the nakṣatra Maghā. So the objection raised by Prof. Sen Gupta is groundless. It says

[39] *Ancient Indian Chronology*, p. 57.

simply that the line passed through the *nakṣatra* Maghā, without specifying any particular point in it. The line, in question, actually passed through the nakṣatra Maghā, as has been shown above, though not exactly through its middle point. It is possible that Professor Sen Gupta had in his mind the nakṣatra Maghā belonging to the system of 27 nakṣatras[40] which begins with the longitude 120° (499) and the middle point of which is very close to the *Star* Maghā, the longitude of which is 128° 58′ (499) in that system. But it has already been established beyond doubt that the system used in the time of Yudhiṣṭhira or Pariksit was of 28 nakṣatras and not of 27. Hence, the objection of Professor Sen Gupta does not hold, and our finding stands as correct.

The time of Bhārata war must be a few years earlier than that of the accession of Parikṣit. We have got the time of the Bhārata war as 1432-31 B. C. So, our date for the war is quite possible and as no other date has been found to be admissible, we have no other alternative than to accept this date as the correct date of the Bhārata war.

Justification of taking the Star β Delphini as marking the first point of Dhaniṣṭhā

The first point of Maghā, in the system of 28 nakṣatras, was behind the first point of Dhainṣṭhā by 180°. So, when the southern solstice reached the first point of Dhaniṣṭhā the northern solstice was at the beginning of Maghā. In 1420 B. C. the longitude of northern solstice was at 116° 20′ (499) and the colure then passed close to and a little to the east of k Draconis, the north pole of this time. About 70 years later the northern solstice reached k Draconis which was at the tail of the constellation *Śiśumāra*. It was exactly at this time, that the southern solstice reached the first point of Dhaniṣṭhā. The longitude of k Draconis

[40] *Ancient Indian Chronology*, p. 57 last 3 lines, and p. 58 first 2 lines.

is 115° 24' (499). The first point of Dhaniṣṭhā must be in advance of this, by 180°, hence its longitude should be, 295° 24′ (499). The longitude of β Delphini is 295° 29′ (499). According to Mārkaṇḍeya's statement, the Dhaniṣṭhādi i. e. the first point of Dhaniṣṭhā was, at the time of Yudhiṣṭhira and later, considered to be the beginning of the sidereal sphere. When the southern solstice was at the first point of Dhaniṣṭhā, the northern solstice was at the first point of Maghā and the vernal equinox, at the first point of Kṛttikā (all of the new system). This time corresponds to about 1346 B. C. At this time, we have the stars k Draconis (115° 24′)[41] and β Delphini (295° 29')[42] marking respectively the northern and southern solstices of the time and either of them might have been taken, as the standard beginning. If we take the longitude of k Draconis, (i. e., 115° 24′) to be the beginning of Maghā, then the beginning of Dhaniṣṭhā, would be 295° 24′. If we consider β Delpheni (295° 29′) to have marked the first point of Dhaniṣṭhā, then the first point of Maghā would be 115° 29′, that is, the first point of Maghā would then be in advance of k Draconis by about 5′ only. To decide between these two, we take to the following reason.

In the group Dhaniṣṭhā, there are other stars much brighter than β Delphini. Such as,

Stars		Longitude		Latitude	
δ Capricornus	..	302°	12′	−2°	26′
ξ Aquarii	..	303	12	+5	58
κ Capricornus		296	6	−6	54
whare as					
β Delphini	..	295	29	+31	57

In the *Sūryya-Siddhānta* and other Indian Astronomical works, we find that β Delphini has been universally re-

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[41] and [42] These longitudes are referred to the equinox of 499 A.D.

cognised as the Yogatārā of Dhaniṣṭhā. In the above list, we find that β Delphini is very far from the ecliptic, but the other stars of the same nakṣatra are very close to it. The question may arise why β Delphini has been chosen as the Yagatārā in preference to all others nearer to the ecliptic. The only reason, that we can assign to it, is that β Delphini was so chosen as it marked exactly the first point of the nakṣatra Dhaniṣṭhā. The modern Indian Siddhāntas only followed this ancient tradition and accepted it as such. So, our decision goes in favour of β Delphini , to have marked the first point of Dhaniṣṭhā in the ancient time.

Therefore the longitude of the first point of Dhaniṣṭhā should be taken as 295° 29′ (499) and not 295° 24′ (499).

Planetary positions during the Bhārata war

Some of the scholars have dealt with the question of planetary positions, during the Bhārata war. All of them appear to be of opinion that the evidences, regarding the planets as recorded in the *Mahābhārata*, are full of contradictions and absurdities. Still they tried to utilise a few of them, which might tally with the actual positions in their respective years, with some show of coincidence. We do not propose to go into these at any length, but give, below, the positions of the planets on the first and the last days of the war only. They may be taken, as they are worth. They are as follows :

Positions of planets at mean noon, on the meridian of Kurukṣetram (from vernal equinox of date)

Planets	1st day of war			Last day of war		
	Longitude of Planets	Corresponding Nakṣatras	Long. of Planets	Corres. Nakṣatras	Remarks
Sun	201° 41′ 50″	Jyeṣṭhā	219° 3′ 18″	Pūrvāṣāḍha	All nakṣatras are of the new system, i. e. of 28 nakṣtras.
Moon	199 33 48	„	56 18 26	Punarvasu	
Mercury	199 9 15	„	227 55 26	Pūrvāsāḍha	
Venus	221 22 53	Pūrvāṣāḍha	243 53 10	Abhijit	
Mars	90 22 43	Maghā	90 39 47	Maghā	
Jupiter	270 52 54	Dhaniṣṭhā	273 36 6	Dhaniṣṭhā	
Saturn	202 43 14	Jyeṣṭhā	204 43 4	Mūla	
Rahu	231 6 24	U. Āṣāḍha	230 12 23	P. Āṣāḍha	

Star Jyeṣṭhā 202° 15′
Star Dhaniṣṭhā 268 50
Nakṣatra Jyeṣthā from 191° 41′ to 204° 33′
} According to the system of 28 Nakṣatras.

It may be noted that we have also some approach to coincidence here with some references in the *Mahābhārata*, though we cannot attach much importance to them. They are given below :

रोहिणीं पीडयत्येवमुभौ च शशीभास्करौ ।[43]

मघास्वंगारको वक्रः श्रवणे च बृहस्पतिः ॥[44]

Translations.—(1) The sun and the moon are afflicting the nakṣatra Rohiṇī or Jyeṣṭhā.

We have seen that the sun and the Moon were in the nakṣatra Jyeṣṭhā on the 1st day of the war. It has been shown in the table above.

(2) Retrograde Mars is in the constellation of Maghā and Jupiter is in Śravaṇā.

In Bhīsmaparva chapter 3.

[43] Verse 14.

[44] Verse 17.

In the table we find Mars to be in Maghā throughout the war. But it is not yet retrograde but will be so, very soon.

We find Jupiter in the table, at the beginning of the nakṣatra Dhaniṣṭhā, which it has just stepped in to from the nakṣatra Śravaṇā.

Bhārata Sāvitrī and its claim

We had to refer to the *Bhārata Sāvitrī*, more than once. We propose here to discuss, if it has really any claim to be more authentic than the *Mahābhārata* itself.

The dates of events, relating to the Bhārata war, as given by *Bhārata Sāvitrī* are differrent from those, that are obtained from the statements of the most important personages, who took part in the Bhārata war. Some scholars prefer to base their respective times of the Bhārata war, on the views of the *Bhārata Sāvitrī*. It is therefore, considered necessary to see, if there is really any justification for doing so.

We get the mention of *Bhārata Sāvitrī* and its views, in the commentary of the *Mahābhārata* by Nīlakaṇṭha. Under chapter 17, Bhīṣma Parva, Nīlakaṇṭha gives the following account of the views of the *Bhārata Sāvitrī*—

कुरु-पांडव-युद्धारम्भ—दिनं उक्तं भारत-सावित्र्यां-हेमन्ते प्रथमे मासि शुक्ल-पक्षे त्रयोदशीम् प्रवृत्तं भारतं युद्धं नक्षत्रे यमदैवते प्रथमे मार्गशीर्षे। अत्र त्रयोदशीशब्देन तद्युक्ता चतुर्दश्येव ग्राह्या। 'अर्जुनेन हतो भीष्मो माघमासे असिताष्टमी'ति 'त्रयोदश्यां तु मध्यान्हे भारद्वाजो निपातित' इति। तत्रैव युद्धस्य दशमे पंचदशे चान्हि हतयो भीष्म-द्रोणयोः अष्टमी-त्रयोदशी-संयोगदर्शनात्। अत्र पौषेपि माघशब्दः......यत्तु अमावास्यायां दुर्योधनहननं तत्रैवोक्तं.....किन्च 'चत्वारिंशदहान्यद्य द्वे च मे निःसृतस्य वै पुष्येण संप्रयातोस्मि श्रवणे पुनरागतः।' इति युद्धारम्भात् अष्टादशेन्हि तीर्थयात्रातः आगतस्य बलदेवस्य वचनात् श्रवणे युद्धसमाप्तिः।

The purport of the commentary is as follows:—

The war began on the day, which began with Śukla 13th and ended in Śukla 14th. It was in the first of the month of Hemanta, i. e., in the month of Mārga-

sīrṣa. The nakṣatra was then Yamadaivata (Kṛttikā). Bhīṣma fell in the fight with Arjuna, on Kṛṣṇa 8th, in the lunar month of Pauṣa.

Droṇa was killed on the Kṛṣṇa 13th. Duryodhana was killed on amāvāsyā day, i. e. the last day, on which Baladeva returned from pilgrimage, when the nakṣatra was Śravaṇā.

We give below, the list of events, as obtained from the statements of Kṛṣṇa and Bhīṣma and corroborated by other persons, who took active part in the war, as obtained from the *Mahābhārata* along with those of the *Bhārata Sāvitrī*, as suppolied by Nīlakaṇṭha.

Events in connection with Bhārata war

Ser. nos.	Events	According to *Mahābhārata*	according to *Bhārata Sāvitrī*
1	Sun in Jyeṣṭhā ..	67 days before the southern solstice day.	80 days before the southern solstice day.
2	Beginning of battle	Amāvāsyā in Jyeṣṭhā 67 days before S. S. day.	Śukla 13th, in Kṛttikā 67 days before S. S. day.
3	Bhīṣma's fall ..	Śukla 10th, 58 days before S. S, day.	Kṛṣṇa 8th, 58 days before S. S. day.
4	Death of Droṇa	Pūrṇimā, 53 days before S. S. day.	Kṛṣṇa 13th, 53 days before S. S. day
5	Last day of war	Kṛṣṇa 23rd, Nakṣa. Punarvasu, Puṣya, 50 days before S. S. day	Amāvāsyā, Nakṣa. Śravaṇā 50 days before S. S. day
6	Bhīṣma's expiry..	Śukla 8th S. S. day	Kṛṣṇa 78th S. S. day.
7	Tithis, during war.	1st day, amāvāsyā 2nd to 16th Śukla, 17th to 18th, Kṛṣṇa Pakṣa.	1st to 3rd day, Śukla Pakṣa 4th to 18th Kṛṣṇa Pakṣa.

The theory of the *Bhārata Sāvitrī*, is based on the assumption, that the solstitial colure, in the time of Yudhiṣṭhira, passed through the star Maghā. When this was the case, the southern solstice must have been at a distance of 180° from the star Maghā.

Longitude of star Jyeṣṭhā	..	228° 54′ (499)
Longitude of star Maghā	..	128 58 (499)
Distance of star Maghā to star Jyeṣṭhā		99 56
" " " southern sols.	..	180°
" " " Jyeṣṭhā to S. S.		80 4
i. e. about	..	80°

Taking 1° approximately for the daily motion of the sun, he would take about 80 days in moving from Jyeṣṭhā to the southern solstice.

So, the statement, that in Yudhiṣṭhira's time, the northern solstice was at the star Maghā, becomes synonymous with the statement that at Yudniṣṭhira's time the sun took 80 days in moving from the star Jyeṣṭhā to the then southern solstice. The time, when the solstitial colure passed through Maghā, may be obtained as follows :—

Longitude of the star Maghā	..	128° 58′ (499)
" " " from Eqnx of date		90
Pecession upto 499 A. D.	..	38 58

Taking precessional rate=49″ 64, the interval to 499 A. D.=2826 years.

The year when sols. colure passed through Maghā=
=499-2826= – 2327 A. D.
=2328 B. C.

That this year (2328 B. C.), or any other year close to it cannot be the time of Yudhiṣṭhira has already been proved beyond doubt. The main reasons for this is summarised below :

(1) The statements of Bhīṣma and Kṛṣṇa give definitely the interval between, the amāvāsyā in Jyeṣṭhā and the then

southern solstice, as 67 days. This led us to the date of the Bhārata war as 1432-31 B. C. The solstitial colure then passed through a point about 12 to the west of the star Maghā.

(2) Mārkaṇḍeya's statement fixes the date of the Bhārata war between limits 1589 B. C. and 1347 B. C.

(3) *Atharva Veda*, which is the most ancient authority on the solstice in the nakṣatra Maghā, is definite about the colure not passing through star Maghā. We have seen that according to Mārkaṇḍeya, Abhijit was included in the system of nakṣatras in or after the year 1598 B.C. *Atharva Veda* gives the list of 28 nakṣatras including Abhijit. So, the list must have been composed by this time. At this time, the solstitial colure passed through a point about 10°, behind the star *Maghā*. It is likely that this point was intended by the author of the *Atharva Veda* when he said that अयनं मघा मे.

(4) The statement about the Maghā-Saptarṣi line, based on actual observation, gives the position of the solstitial colure in the time of Parikṣit, the grandson of Arjuna, at about 12½° to the west of the star Maghā.

These are the conclusive evidences against the assumption, that solstitial colure passed through the *star* Maghā in the time of Yudhiṣṭhira. They also set aside the view that the sun took 80 days in moving from the star Jyeṣṭhā to the then southern solstice at that time. The assumption must therefore, be taken as utterly false and impossible in nature.

In order to adapt the above assumption, to dates of events, in connection with the Bhārata war, *Bhārata Sāvitrī* had to make more assumptions. It could

not reject the statements of Bhīṣma and Kṛṣṇa altogether, as they were too strong to be rejected. But it met them half way; it accepted the statement of Bhīṣma to the extent, that he (Bhīṣma) died on the southern solstice day, just 67 days after the beginning of the war and rejected the tithi on this day, which was Śukla 8th, (according to Bhīṣma). It accepted Kṛṣṇa that amāvāsyā fell in Jyeṣṭha, but he rejected that this was the 1st day of the war. By Jyeṣṭhā, Kṛṣṇa meant the *nakṣatra* Jyeṣṭhā; but *Bhārata Sāvitrī* took it as the *star* Jyeṣṭhā.

The splitting up of evidences into parts, and taking a part and rejecting the rest are not justifiable.

These false and faulty assumptions constitute the mainsupport to the theory of the *Bhārata Sāvitrī*, and on these whole of its structure rests. All its results are derived from these data as shown below.

According to *Bhārata Sāvitrī*, it was on amāvāsyā that the sun was in conjunction with star Jyeṣṭhā. But this day was 80 days before the southern solstice day. The war began, 67 days before the southern solstice day, *i. e.* just 13 days after this amāvāsyā day; hence, it must be the Śukla 13th. As the nakṣatra on the amāvāsyā day was Jyeṣṭhā, the nakṣatra on the first day of the war must, necessarily, fall in Kṛttikā. Kṛttikā being the 14th nakṣatra from Jyeṣṭhā in the system of 27 nakṣatras. The last day of the war was 31 days ahead of Jyeṣṭhā and the 31st nakṣatra ahead of Jyeṣṭhā is the nakṣatra Śravaṇā. The tithi on the 1ṣt day of the war being Śukla 13th, the first 3 days of the war will naturally fall in the bright half and the remaining portion, in the dark half. These are exactly the results, which constitute the view of *Bhārata Sāvitrī*.

All these results or conclusions having been derived from false assumptions or premise are sure to be false and invalid.

Now, if we come across some such passages, in the *Mahābhārata*, as conform perfectly to the views of *Bhārata Sāvitrī*, we have no other alternative than to consider them as interpolation, willfully made to strengthen the case of *Bhārata Sāvitrī*. If some verses in the *Mahābhārata* are interpreted in such a way as to give results, just in agreement with the views of *Bhārata Sāvitrī*, they must be taken as misinterpretation. If we find, somewhere, that the texts are modified so as to give senses, just in accord with *Bhārata Sāvitrī*, we have to reject it as spurious. There are really such cases, in the *Mahābhārata* and in the interpretations of some of the supporters of *Bhārata Sāvitrī*.

People, who do not know that it was not possible for the solstitial colure in Yudhiṣṭhira's time to be at the star Maghā nor for the sun to take 80 days to pass from the star Jyeṣṭhā to the then southern solstice, may be apt to take the results of the *Bhārata Sāvitrī* (as arrived at from the false assumptions) as evidences, in support of the theory as advanced by *Bhārata Sāvitrī*; and in fact, many of the workers have followed the very same procedure and have thereby been misled.

We give, below, a few instances, which would show clearly how *Bhārata Sāvitrī* attempted to attain its ends.

To prove, that the tithi, on the first day of the war, was Śukla 13th, and not amāvāsyā, *Bhārata Sāvitrī* made use of the statement of Vyāsadeva, which appeared to be quite pliable for the purpose.

The statement of Vyāsadeva has been given and explained in pages 26-27. As we have to meet the arguments of *Bhārata Sāvitrī*, we may be permitted to quote it here again.

अलक्षः प्रभयाहीनः पौर्णमासीं च कार्तिकीम् ।
चन्द्रोभूदग्निवर्णश्च पद्मवर्णे नभस्तले ॥

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[45] Bhīṣma Parva, Ch. 2. Versec 23.

It is very clear and explicit. It was the result of an observation made by him, *in the full moon night*, just preceding the amāvāsyā, on which the war was to begin. The full moon occurred in the nakṣatra Kṛttikā. The aspect of the sky and the moon in that night, appeared to him as unnatural and ominous, foreboding aweful calamity in the near future. The statement also supplied the information, that the lunar month of Kārttika was completed with the full moon, in the nakṣatra Kṛttikā, and that the lunar month of Mārgaśīrṣa began with the end of this full moon and would continue up to the next full moon, in the nakṣatra Mṛgaśirā. Vyāsadeva's statement is perfectly consistent with that of Kṛṣṇa, regarding the next amāvāsyā in Jyeṣṭhā.

On the eve of the war Vyāsadeva seems to have spoken to Dhṛtarāṣṭra, of this full moon night, implying thereby that the outbreak of this terrible war, with the consequent destruction of human lives, was a forgone conclusion. There is nothing unusual in it. It may be noticed that there is not the remotest suggestion here to shew that Vyāsadeva made the observation, in the very night of the first day of the war and that the war began on the full moon night of Mārgaīrṣa, or near about it.

If it could be shewn, by some means or other, that Vyāsa made the observation in question in the same night (i. e. in the night of the first day of the war), then it would clearly mean that he (Vyāsa) considered the war to have begun in the full moon night of Mārgaśīrṣa and not in the amāvāsyā according to Kṛṣṇa's statement. In that case the latter theory (as indicated by Kṛṣṇa's statement) would be completely demolished.

Again, this full moon follows the amāvāsyā in Jyeṣṭhā; and so it would fall in the nakṣatra Mṛgaśirā, (the lunar month then being Mārgaśīrṣa). According to Vyāsa's statement the moon was in Kṛttikā and this was possible

just 2 days before this full moon day, that is, on the tithi, Śukla 13th. And this Śukla 13th was exactly the tithi, on which, according to *Bhārata Sāvitrī*, the war began. If it now be assumed that Vyāsa was a bit inaccurate in his estimate of the tithi, then his statement would go fully in support of the theory of *Bhārata Sāvitrī*.

So, by the introduction of a slight change as to the time of observation in the text, the complete transformation of the sense would be effected resulting in the complete demolition of the standard theory and the full establishment of the new one simultaneously. This would be, as it were, killing of two birds with a single stone.

Professor Sen Gupta, a staunch follower and enthusiastic supporter of *Bhārata Sāvitrī*, supplies us with a version of Vyāsa's statement. It runs as follows :

> आलक्षे प्रभयाहीनां पौर्णमासीं च कार्त्तिकीम् ।
> चन्द्रोभूदग्निवर्णश्च पद्मवर्णे नभस्तले ॥

The word, affecting the meaning of the text, is *Ālakṣe* in this, in the place of *Alakṣaḥ*, in the common text, as given above by us. We have consulted all available sources, but nowhere could we find the version, given by Professor Sen Gupta. As he voices the theory of *Bhārata Sāvitrī*, we may take the new text to belong to *Bhārata Sāvitrī* itself.

Ālakṣe is a verb in *Laṭ* (the present tense) and means "I see or I am seeing," whereas *Alakṣaḥ* is an adjective to the word *Candra* in the next line, meaning 'obscure or not quite discernible.'

We quote below, the translation and the remarks thereon by Prof. Sen Gupta :—

> "But the battle did not actually begin with the new moon. *For* on the eve of the first day of the battle, Vyasa thus spoke to Dhritarastra :
>
> " *To night* I find the full moon at the Kṛittikas (Pleiades) lustreless, the moon became of a fire-like colour in a lotus hued heaven."

"If there be a new moon at the star Antares, the next full moon connot be at the star group Pleiades. At the mean rate of motion, the moon takes exactly 12 days 23 hours or about 13 days, to pass from the Antares to Pleides . . . The moon was about 13 days old and not full. Vyasa, by looking at such a moon, thought the night, to be Purnamasi."

This is the complete account of the reason (as the *Bhārata Sāvitrī* wants us to believe) for taking Śukla 13th to be the first day of the war.

It may be noticed that in his attempt to attain his object, *Bhārata Sāvitrī* reduced Vyāsadeva who is known to be the greatest sage of the time, to a mere dullard, not competent enough to distinguish between the moon of the thirteenth tithi and that of the full moon night or the month of Kārtika from the month of Mārgaśirṣa.

All available sources have been consulted; everywhere the word *Alakṣaḥ* has been found to stand in the text. We have the word *Ālakṣe* in the only solitary quotation, as given by Prof. Sen Guta. So the presumtion is in the favour of the word *Alakṣaḥ*. The reading *Ālakṣe* seems to be incorrect.

The second lines, in both the texts, are identical. It may be noticed that the word "Abhūt" occurs there as verb to *Candra* (the moon). "Abhūt" is in *Lang* (past). It is used only in connection with an event happened some time ago. It should not be used for event occurring in the present. Hence, the sceond line, when interpreted would stand thus—

The moon *became* fire-coloured and lotus-hued in the *past*.

The second line is common in all the texts (including that of *Bhārata sāvitrī*) and therefore, considered to be recognised universally.

The event, implied, in the first line of the text, forms part of the event, in the second line. Both the lines give the description of the one and the same event, as regards

time. As there is no question about the time (as expressed in the second line) i. e. the past, so there can be no question about the time that would be indicated by the 1st line as well. So the use of a word in the first line signifying an event occurring in the present, is not compatible with the past event, implied in the second. Hence, the word *Ālakṣe* in the first line, must be discarded as spurious. It must have been inserted only to mislead unsuspecting people.

This is a case of distortion ; but it served no purpose. This change was intended to show that the war began on the Śukla 13th and not on amāvāsyā. Had the war been realy postponed to some other date than the amāvāsyā (as in Kṛṣṇa's statement), the fact must have been noted somewhere in the body of the *Mahābhārata*. At least Bhīṣma, who took part in the war, must have known of it; his statement is in complete agreement with Kṛṣṇa's statements ; for after 67 days of the war Bhīṣma still maintained that the war began on the amāvāsyā day for he gave the tithi on the day of his expiry as Śukla 8th. It is the direct consequence of the fact that the war began on the amāvāsyā day and not on the full moon day or on the Śukla 13th. Professor Sen Gupta dismissed the statement of Bhīṣma, by saying that it had only been a pious wish on the part of Bhīṣma, but not materialised[46]. But he did not adduce any evidence in support of this. As the date of Bhīṣma's expiry was long after the 1st day of the war, there cannot arise any question of "pious wish" and his statement has the value and force of deciding evidence as to the past event. So it proves completely and unmistakebly that the war began on the amāvāsyā day. Hence, it is certain, that Vyāsa could never say, that it began on the Pūrṇimā day and that the interpretation given to his statement (by *Bhārata Sāvitrī* or Prof. Sen Gupta) was certainly incorrect.

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[46] *Ancient Indian Chronology, p.* 8.

Hence, it is proved beyond doubt that the author of the *Bhārata Sāvitrī* effected distortion in the text of Vyāsadeva and thereby wanted to establish himself.

Baladeva's statement has been discussed before and is given here below again. It runs as follows :—

चत्वारिंशदहान्यद्य द्वे च मे निःसृतस्य वै ।
पुष्येण संप्रयातोऽस्मि श्रवणे पुनरागतः ॥

Our interpretation is : 42 days of my pilgrimage are completed with Puṣya ; for I went out in Śravaṇā ; I have now come back again.

Nīlakaṇṭha gives the following interpretation of the same verse :—

This is the forty second day of my pilgrimage ; for I went out *in* Puṣya and have come back *in* Śravaṇā.

It may be noticed that the word puṣyeṇa is taken here to mean *in* Puṣya and not *with* Puṣya, as is implied by the 3rd case ending with Puṣya. Is it merely an oversight or intentional misinterpretation ?

It will be seen that this interpretation of Nīlakaṇṭha supports *Bhārata Sāvitrī*. For according to *Bhārata Sāvitrī*, as we have already seen, the nakṣatra on the first day of the war was Kṛttikā. Baladeva returned on the last day of the battle i. e. after 17 days from the first day. If we take the moon to have crossed over 18 nakṣatras in 17 days then the nakṣatra on the last day would come to the Uttarāṣāḍha, just one nakṣatra behind Śravaṇā. But making allowance for the unequal motion of the moon, it might be possible for the moon to reach Śravaṇā on that day. Again, Puṣya is the 8th nakṣatra from Aświnī (being taken as the first). If Baladeva had started in Puṣya, then on the 42^{nd} day from start, the nakṣatra might be $8+41=49$th or (49-27) th or 22nd from Aświnī. So it is then Śravaṇā. It may be put in the other way ; according to Baladeva's statement the nakṣatra on the 18th or the last

day of the war was Sravaṇā, therefore, the nakṣatra on the first day of the war must be Kṛttikā, just supporting *Bhārata Sāvitrī* and contradicting Kṛṣṇa's statement which said that the nakṣatra on the first day of the war was Jyeṣṭhā.

It is through Nīlakaṇṭha, that *Bhārat Sāvitrī* was brought to light. About the learning of Nīlakaṇṭha there is no question. But he was a strong supporter to the claims of *Bhārata Sāvitrī*; so there seems to be just a probability of his misinterpreting the text, knowing it quite well that this interpretation was wrong. For, it was based on the wrong assumption that Jyeṣṭhā was at a distance of 80° from the southern solstice as has been fully established before.

Or, it might be possible, that the author of *Bhārata Sāvitrī* was responsible for this misrepresentation and misinterpretation. Nīlakaṇṭha only followed him and accepted him as authority, in the matter of dates and other particulars, in connection with the Bhārata war.

From the above discussions we come to the following conclusions :

(1) (a) The claim of *Bhārata Sāvitrī* has nothing to stand on. It is based on the false and impossible assumption that the northern solstice was at the *star* Maghā in Yudhiṣṭhira's time.

(b) The author of *Bhārata Sāvitrī* took to distortion and wilful misrepresentation of facts to create new evidences to make up for the defect and thereby to attain his objects. The game is so transparent that it cannot escape the eye of scrutiny. Therefore it must be rejected.

(2) (a) The evidences in the *Mahābhārata* give the correct date for the time of the Bhārata war.

(b) The first day of the war really fell on amāvāsyā in which the sun was in conjunction with Jyeṣṭhā.

(c) Bhīṣma died just after 67 days of the first day of the war.

(d) The day on which Bhīṣma died was the southern solstice day and it was the Śukla eighth.

(e) The bright fortnight extended from the day of the war to the 16th day, the last two days having been in the dark half.

If now, we come across any statements in the *Mahabhārata* which seem to go against the above conclusions, we would have no other choice than to discard the same as spurious. Let us examine some such passages as given below :—

अर्धं रात्रिः समाजज्ञे निद्रान्धानां विशेषतः।
सर्वें ह्यासन्निरुत्साहाः क्षत्रिया दीनचेतसः॥
ततो विनिद्रा विश्रान्ताश्चन्द्रमस्युदिते पुनः।
संसाधयिष्यथान्योन्यं संग्रामं कुरुपांडवाः॥
यथा चन्द्रोदयोद्भूतः क्षुभितः सागरोभवत्।
यथा चन्द्रोदयोद्भूतः स बभूव नलार्णवः॥
ततः प्रववृते युद्धं पुनरेव विशाम्पते।
लोके लोकविनाशाय परलोकमभीप्सताम्॥[47]

The passages refer to the battle of the 14th day, at the sunset and the midnight in which, Jayadratha and Ghaṭotkaca were respectively killed. The purport of the verses is that the soldiers got very tired at midnight and fell asleep. They got up again refreshed, when the moon rose before dawn and resumed the fight.

The astronomical significance of the passages is that the night in question, was one of Kṛṣṇa Pakṣa or the Dark fortnight. But, according to the data of the *Mahābhārata*, the validity of which has been proved beyond doubt, the war began on the amāvāsyā day. Hence, the bright half continued up to the 16th day of the war; during this

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[47] *Mahābhārata*, Droṇa Parva, Ch. 180.

period and also in the last two years there was no possibility of the moon to rise in the morning. But in accordance with the views of the *Bhārata Sāvitrī* (which have been shown to be erroneous and groundless), the dark fortnight began from the 3rd day of the war and continued nearly to the end. We discern here clearly the hand of the author of the *Bhārata Sāvitrī* or some of his followers who inserted these verses in the body of the *Mahābhārata*, to make the theory of the *Bhārata Sāvitrī* stronger.

These and similar pasages therefore, must have to be taken as spurious and must be rejected accordingly.

SUMMARY

P. 1. Introduction.

Pp. 1-16. Review of contemporary workers. It has been shown that these workers derived their respective dates of the Bhārata war from different extraneous sources and not from the evidences given in the *Mahābhārata*. They made use of the *Mahābhārata* evidences only to estaablish their dates ; in doing so they had occasion to modify the *Mahābhārata* statements in some cases and to misinterpret them in some others.

Pp. 16-33. Preliminary steps to Determination of date of Bhārata war. We scrupulously followed the *Mahābhārata* evidences only and tried to determine the date of the Bhārata war therefrom. We began at first with provisional assumption that the sun was at the star Jyeṣṭhā in Amāvāsyā (on the first day of the war) and obtained its date as 1432-31 B. C.

Pp. 34-42. Limits to the Date of Bhārata war. We got the limits to the time of Yudhiṣṭhira as 1589 B. C. and 1347 B. C. from Mārkaṇḍeya's statement.

Pp. 42-49. All possible years between these limits have been tested. The YEAR 1432-31 B. C. was found to agree with the calendar for the year of the Bhārata war in all respects and hence was accepted as the CORRECT DATE OF THE BHĀRATA WAR.

Pp. 49-56 Maghā Saptarṣi (solstitial colure) in the time of Parikṣit was discussed and the corresponding time was found to be about 1408 B. C.

Pp. 56-58 Justification for taking β Delphlini to be the first point of the nakṣatra Dhaniṣṭhā was discussed.

Pp. 58-60 Planetary positions, for the first and the last day of the Bhārata war, have been given.

Pp. 60-73 The claim of *Bhārata Sāvitrī* has been criticised. Its theory has been found to be based on the false assumption that at the time of Yudhiṣṭhira, the northern solstice was at the star Maghā. The author of *Bhārata Sāvitrī* seems to be responsible for many interpolations in the *Mahābhārata*.

APPENDIX A

Table of Distances from O (zero Dhaniṣṭhā) to the Beginning and End of nakṣatras of the Old and New systems.

Old System (27) Nakṣatras				New System (28 Nakṣatras)			
Ser. No.	Nakṣatras	Beginning	End.	Ser. No	Nakṣatras	Beginning	End.
1	Dhaniṣṭhā	0 0	13 20	1	Dhaniṣṭhā	0 0	12 51
2	Śatabhiṣā	13 20	26 40	2	Śatabhiṣā	12 51	25 43
3	P. Bh. Pada	26 40	40 0	3	P.Bh. Pada	25 43	38 34
4	U. Bh. Pada	40 0	53 20	4	U. Bh. Pada	38 34	51 26
5	Revatī	53 20	66 40	5	Revatī	51 26	64 17
6	Aświnī	66 40	80 0	6	Aświnī	64 17	77 9
6¾	¾ of Bharaṇi		90 0				
7	Bharaṇī	80 0	93 20	7	Bharaṇī	77 9	90 0
8	Kṛttikā	93 20	106 40	8	Kṛttikā	90 0	102 51
9	Rohiṇī	106 40	120 0	9	Rohiṇī	102 51	115 43
10	Mṛgaśirā	120 0	133 20	10	Mṛgaśirā	115 43	128 34
11	Ārdrā	133 20	146 40	11	Ārdrā	128 34	141 26
12	Punarvasu	146 40	160 0	12	Punarvasu	141 26	154 17
13	Puṣya	160 0	173 20	13	Puṣya	154 17	167 9
13½	½ of Aśleṣā		180 0				
14	Aśleṣā	173 20	186 40	14	Aśleṣā	167 . 9	180 0
15	Maghā	186 40	200 0	15	Maghā	180 0	199 51
16	P. Phālgunī	200 0	213 20	16	P. Phālgunī	192 51	205 43
17	U. Phālgunī	213 20	226 40	17	U. Phālgunī	205 43	218 34
18	Hasta	226 40	240 00	18	Hasta	218 34	231 26
19	Citrā	240 0	253 20	19	Citrā	231 26	244 17
20	Swātī	253 20	266 40	20	Swātī	244 17	257 9
20½	½ of Viśākhā		270 0				
21	Viśākhā	266 40	280 0	21	Viśākhā	257 9	270 0
22	Anurādhā	280 0	293 2	22	Anurādhā	270 0	282 51
23	Jyeṣṭhā	293 20	306 40	23	Jyeṣṭhā	282 51	295 43
24	Mūla	306 40	320 0	24	Mūla	295 43	308 34
25	P. Āṣaḍha	320 0	333 20	25	P. Āṣādha	308 34	321 26
26	U. Āṣaḍha	333 20	345 40	26	U. Āṣadha	321 26	334 17
				27	Abhijit	334 17	347 9
27	Śravaṇā	346 40	360 0	28	Śravaṇa	347 9	360 0

APPENDIX B

Table of Distances of the beginning and the end of nakṣatras from the equinox of 499 A. D.

Old system (27 nakṣatras)				New system (28 Nakṣatras)			
Ser. No.	Nakṣatras	Beginning	End.	Ser. No.	Nakṣatras	Beginning	End.
1	Dhaniṣṭhā	295 29	308 49	1	Dhaniṣṭhā	295 29	308 20
2	Śatabhiṣā	308 49	322 9	2	Śatabhiṣā	308 20	321 12
3	P. Bh. Pada	322 9	335 29	3	P. Bh. Pada	321 12	334 3
4	U. Bh. Pada	335 29	348 49	4	U. Bh. Pada	334 3	346 55
5	Revatī	348 49	2 9	5	Revatī	346 55	359 46
6	Aświnī	2 9	15 29	5	Aświnī	359 46	12 38
6¾	¾ of Bharaṇī		25 29				
7	Bharaṇī	25 29	28 49	7	Bharaṇī	12 38	25 29
8	Kṛttikā	28 49	42 9	8	Kṛttikā	25 29	38 20
9	Rohiṇī	42 9	55 29	9	Rohiṇī	38 20	51 12
10	Mṛgaśirā	55 29	68 49	10	Mṛgaśirā	51 12	64 3
11	Ārdrā	68 49	82 9	11	Ārdrā	63 3	76 55
12	Punarvasu	82 9	95 29	12	Punarvasu	76 55	89 46
13	Puṣya	95 29	108 49	13	Puṣya	89 46	102 38
13¾	½ of Aśleṣā		115 29				
14	Aśleṣā	108 49	122 9	14	Aśleṣā	103 38	115 29
15	Maghā	122 9	135 29	15	Maghā	115 29	128 20
16	P. Phālgunī	135 29	148 49	16	P. Phālgunī	128 20	141 12
17	U. Phālgunī	148 49	162 9	17.	U. Phālgunī	141 12	154 3
18	Hasta	162 9	175 29	18	Hasta	154 3	166 55
19	Citrā	175 29	188 49	19	Citrā	166 55	179 46
20	Swāti	188 49	202 9	20	Swātī	179 46	192 38
20¼	¼ of Viśākhā		295 9				
21	Viśākhā	202 9	215 29	21	Viśākhā	192 38	205 29
22	Anurādhā	215 29	228 49	22	Anurādhā	205 29	218 20
23	Jyeṣṭhā	228 49	242 9	23	Jyeṣṭhā	218 20	231 12
24	Mūla	242 9	255 29	24	Mūla	231 12	244 3
25	P. Āṣāḍha	255 29	268 49	25	P. Āṣāḍha	244 3	256 55
26	U. Āṣāḍha	268 49	282 9	26	U. Āṣāḍha	256 55	269 46
				27	Abhijit	269 46	282 38
27	Śravaṇā	282 9	295 29	28	Śravaṇā	282 38	295 29

EPIGRAPHIC NOTES

By V. V. Mirashi

In a note published in a previous number of this *Journal*,[1] Dr. G. S. Gai has objected to my statement that the decimal notation began to supersede numerical symbols both in the North and South India about the same time viz. in the last quarter of the eighth century A. C. He has tried to show that the decimal notation began to be used in North and South India as early as the second quarter of the seventh century A. C. It is proposed to examine this question at some length in this article.

As regards inscriptions of North India. Dr. Gai has drawn attention to two records viz. the Sakrai stone inscription[2] whose date has been read by Dr. Chhabra as V. 699 (A. C. 642-43) and the Dhiniki grant of Jāikadeva[3] dated V. 794 (A. C. 737) the dates of which are expressed in decimal figures. These dates are not, however, beyond dispute. The date of the Sakrai inscription, for instance, has been read variously. Dr. Bhandarkar who first noticed the record read its date as V. 879 (A. C. 822).[4] The same record has again been noticed in the *Annual Report* of the Rajputana Museum for 1933-34, p. 2. where its date has been read as V. 749 (A. C. 692).[5] The date contains a mention of the second or intercalary Āṣāḍha. In both the years V. 879 and V. 749, there was an intercalary Āṣāḍha. Dr. Chhabra who has recently edited the inscription in the *Ep. Ind.* has however read its date as V. 699

1. Vol. IV, pp. 306 f.
2. *Ep. Ind.*, Vol. XX II, pp. 29 f.
3. *Ind. Ant.* Vol. XII, pp. 155 and pl.
4. *P. R. A. S., W.E.* 1909-10, p. 56.
5. *An. Rep. Raj. Mus.* 1933-34, p. 2.

(A. C. 642-43). This year also contained an intercalary Āṣāḍha if we take it to be *Kārttikādi*. Dr. Chhabra has justified his reading of the date on the ground of palaeography. He points out that the characters of the inscription closely resemble those of the Madhuban plate of Harṣa, dated in the Harṣa saṃvat 25 (A. C. 631). In view of this divergence of opinion about the reading of its date, the evidence of the Sakrai inscription as regards the use of the decimal notation can hardly be regarded as conclusive.

Let us examine the symbols of this record somewhat closely. There is no difference of opinion as regards the reading of the unit sign. It is undoubtedly 9. The preceding sign is, however, doubtful. Dr. Chhabra has read it as 9. It differs from the unit figure of the same value used in that very record, but Dr. Chhabra has drawn attention to a similar use of dissimilar signs for 9 side by side in the Kāman stone inscription edited by me.[6] The present sign which has the same shape as the *akṣara na* does not, however, exactly resemble the figure 9 used in the Kāman and other inscriptions. The latter has not the right limb brought down in the form of a vertical as is done in the Sakrai inscription. The reading of this sign as 9 is therefore very doubtful. The first sign denoting hundreds is also unlikely to be 6. Dr. Chhabra has called attention to the similarity of the signs denoting 6 and 8 in the Nāgārjunikoṇḍa inscriptions and on that ground proposes to read the first sign as 6, though Dr. Bhandarkar had read it as 8. Dr. Chhabra's reading of the date of the Sakrai inscription as V. 699 is thus very doubtful.

I doubt very much if the date of the Sakrai inscription is expressed at all in decimal figures. The middle sign appears to be a symbol for 30. It is well known that this symbol usually resembled the *akṣara la*. As Dr. Chhabra

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6. *Ep. Ind.*, Vol. XXIV, L. 331.

has remarked, *n* and *l* are very similar in the Sakrai inscription and the one may easily be confused with the other. The middle symbol which has the shape of *na* can therefore be taken to signify 30. The last two symbols thus denote 39. I take the first symbol as denoting 100. It is well known that symbol for 100 has shape of the akṣara *sro* in the inscription of the Pratīhāras.[7] The first symbol used in the Sakrai inscription has almost the same shape. It therefore stands for 100. The date of the Sakrai inscription is thus the year 139.

This date must evidently be referred to the Harṣa era and roughly corresponds to A. C. 745-46. There was however, no intercalary Āṣāḍha either in A. C. 745 or A. C. 746. There was an intercalary month in A. C. 746, but it was Śrāvaṇa. This does not however, present an insuperable difficulty. This case resembles exactly that of the date G. 330 of the Kaira plates of Dharasena IV.[8] The intercalary month in the present case could have been named Āṣāḍha according to the old system of mean intercalation and naming of lunar months. There is thus no difficulty in the reading of the date of the Sakrai inscription as the year 139.

It is not surprising that such a date of the Harṣa era should have been found so far west as Sakrai in the Jaipur State; for the dates of that era have been discovered further west in the Jodhpur State.[9] The evidence of palaeography also does not militate against this reading; for the same characters are found used as late as V. 894, the date of the Jodhpur inscription of Pratihāra Bāuka.[10]

The date of the Sakrai inscription is thus H. 139 (A.D. 647). As this date is expressed in numerical symbols and not

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7. See Ojha: *Prācīna-lipi-mālā*, plate p. lxxxiv.
8. Sewell and Dikshit, *Indian Calendar*, p. xxiii.
9. *Above*, Vol. III, pp. 109 f.
10. *Ep. Ind.*, Vol. XVIII, pp. 87 and pl.

in decimal figures, its evidence does not in any way disprove my statement that the decimal notation came into vogue in North India in the last quarter of the eighth century A. C.

The evidence of the Dhiniki plates of Jāikadeva, the second record of North India cited by Dr. Gai, is still weaker. These plates have long been regarded as spurious for the following among other reasons : (i) their date is irregular ; (ii) their characters are much later than the age to which the record refers itself ; (iii) contrary to what is noticed in other genuine records of the age, they use the name Vikrama in connection with the era. Kielhorn and Fleet were therefore suspicious about the genuineness of the grant and their suspicions have been confirmed by the recent discovery of the Ghumli plates.[12]. According to the Dhiniki plates, *Paramabhaṭṭāraka Mahārājadhirāja Paramesvara* Jāikadeva was ruling at Bhūmilikā in V. 794 (A. C. 738). He must evidently have belonged to the Saindhava dynasty which ruled from Bhūtāmbilikā (plainly identical with Bhūmilikā or modern Ghumli) in North-west Kathiawad in the 8th and 9th century A. C. ; but as Dr. Altekar has shown, there was no ruler of this name in the genealogy of the Saidhavas, who reigned in this period[13]. Besides, the Saindhava rulers of Bhūtāmbi likā were of a feudatory rank and did not claim any imperial status in their own records. There is no doubt therefore, that the Dhiniki grant is spurious and its evidence to prove the use of the decimal notation in the beginning of the 8th century A. C. is worthless[14].

11. *Ind. Ant.*, Vol. XVI, p. 198 and Vol. XIX, pp. 370 f.

12. Ep. Ind., Vol. XXVI, pp. 185 f.

13. *Ibid.*, Vol. XXV I, p. 189.

14. The numerical symbols did not however persist in Kathiawad till G. 596 (A. C. 915-16) as may be supposed on the evidence of the Ghuli plates as read by Dr. Altekar. Only two of the Ghumli grants (viz. A and F) are dated. Dr. Altekar has read their dates as expressed in numerical symbols, but they are really recorded in the decimal notation.

As regards South India, it is true that the decimal notation was partially used in Dakshiṇa Kosala[15] and Kaliṅga about the middle of the seventh century A. C. In several Ganga records, however, the hundreds were still denoted by numerical symbols, though decimal figures were used to denote tens and units. The first date completely expressed in decimal figures is Gn. 195 (A. C. 693-94) of the Siddhantam plates of Devendravarman. In Mahārāṣtra and Gujarat, however, numerical symbols continued in use for a much longer period; for we find the recently discovered Ellora plates of Dantidurga are dated in K. 463 (A. C. 715). Shri Krishna Dev informs we that the Manor plates (Ś. 671) of the same Rāṣṭrakūṭa king recently discovered in Konkaṇ, are similarly dated in numerical symbols. In Gujarat the Antroli-Charli plates of the Rāṣṭrakūṭa Karka have their date Ś. 679 (A. C. 757) similarly expressed.

The foregoing discussion will show that my conclusion regarding the spuriousness of the Mānkaṇi grant is not in any way affected by any of the dates cited by Dr. Gai.

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15. In the Lodia plates of Mahāsivagupta-Bālārjuna the regnal year 57 is expressed in the numerical symbols for 50 and 7, though the *tithi* 30 is given in the decimal notation. See the facsimile of the Plates published in the *Journal of the Kaliṅga Historical Research Society*, Vol. II, plate facing p. 122.

AN ILLUSTRATED HINDI MANUSCRIPT

By Miss Sudha Bose

Dr. Coomaraswamy had made a somewhat general remark that illustrated manuscripts of Hindi Literature of any kind were very rare. This appears to be a too general remark. He himself had discovered and pubilshed a remarkably illustrated manuscript of "*Rasika-priya*" by Keśavadāsa. In the year 1927, the Editor of "*Rupam*" published an artical on an illustrated edition of "*Sundara-Śṛṅgāra*", the work of the famous poet from Gwalior—Sundaradāsa, the court poet of Shah-Jehan. Occasionally other examples of illustrated manuscripts have come to light. The well-known Jaina illustrated manuscripts relate to Jaina canonical texts some times in Sanskrit, mostly in Prākrita. Several illustrated editions of the *Bhāgavata* Purāṇa as well as the *Rāmāyaṇa* are known but very few have been published. But these texts are in Sanskrit, and we are here concerned with Manuscripts in Hindi.

Illustrated Manuscripts are produced when lovers of Hindi poetry seek the aid of the pictorial artist to embellish the pages of their favourite poetical compositions.

Recently three pages of an illustrated Manuscript of Hindi verses have been aquired by Mr. Justice Sen of the Calcutta High Court—by whose kind courtesy we are able to describe the same here—with citations of some of the illustrations. These pages—"part of some complete anthology—are from many point of view of unique interest—both as regards the subject matter of the text and as regards he illustrations." The text appears to be collection of verses of two poets namely: (1) Kṛṣṇadāsa (porbably Kṛṣṇadāsa Payahārī of Galtā, Jaipur) disciple of Ananta Anandajī of *Ramānanda Sampradāya* (2) Paraśurāma, the last named

poet may be Parśurāma Brajabāsī (1660-1690), author of "*Vairāgya nirnaya*" who is characterized by the authors of *Miśra-Bandhu-Vinoda* as a mediocre poet (*Sādhāraṇa Śreṇī*).

According to the suggestions of the well-known authority on Braja-bhāṣā Literature the authors of the verses ascribed to Parśurāma may be Parśurāma mentioned in the works of Kṛṣṇāvatī. Or he may be the poet of this name belonging to the *Nimbārka Sampradāya*, and the disciple of Hari Vyāsa Deva of Sri-Maṭha.

Whatever may be the identity of the poets the verses they have contributed to this collection are of peculiar interest. They, of course, relate to the divine love of Rādhā and Kṛṣṇa.

The *premalīlā* (amours) appears to begin with the gift of the betal leaf reached by the nad(?) of Kṛṣṇa to the lotus lips of beloved Rādhā (Piya-mukha Kamala virivarnan). The verses have considerable sparkle in their stately illustrations and describe the *Śṛṅgāra* with lasting eloquence. The passage is illustrated by a miniature picture introduced on the middle of the page, the verses embracing the picture on the top and at the bottom. The pair is standing on a terrace, covered by a carpet and bounded by Railways, edged by beds of flower, in very summary and decadent conventions. The face of Rādhā, with scorpion look descending by the ear, repeats the type familiar to us in the 18th and 19th century miniatures of the Jaipur School (Jaipur Saili). But the costume of Kṛṣṇa is very peculiar and calls for a comment. He wears a skirt, covering the two legs, like the gown (ghāghrā) worn by ladies. This peculiar costume appears to follow the tunic given to Kṛṣṇa in the illustrations of *Rasika-priyā*, in the Boston Museum.

The next act in the drama of the *prema-lilā* is the pose of the two lovers standing face to face after the ceremony of the gift of the Betal (*Atha virī daivā anantara priyā vadana*

ika-ṭaka rījhi citai boba naina). The two stand under two groups of trees, with the leaves painted with minute details.

But the most astounding feature of the collection is the description of the auspicious ceremonies (maṅgalika upacāra of maṅgala acara) extended to Rādha herself, apparently preparatory to a ceremony of marriage. The auspicious oiling of the body of Rādhā is held as we find in the miniature under a canopy held by the outstretched arms of four *Sakhīs*, while two others are busy in anointing the so called bride with auspicious augments (*Carnas*).

One is at a loss to explain what could be the significance of the só-called *adhivāsa* ceremonies preceding the imaginative marriage of Rādhā, unless it be the early marriage of the goddess with her human spouse Ayana-ghoṣa

More information on this mysteries will be welcome from the experts of Bhagavata literature and Sṛṅgāra Kavitās in connection with the Kṛṣṇa-Cult.

We will close our short notice of this interesting miniature by quoting some typical verses from this connection :—

Atha Singarantara priya-mukha-kamala viri dain varnana-:—

Doha :

Tiya singār piyayo na dai citai kari bhuva bhang,
Vīrī nīrī huna gaī bhai nainani gati pang.

Jathā udāharan : kavitta :
Nāgarī navala guna āgarī rangīlī jakau vādyau hai
Prakāsa mukha canda kuñja bhaū maī.
VākaVāka bhaū haī vaḍe nāin kahata vanaī na chovi rahyau hai
Sarasa ranga varasi citāuna maī.
Cahai sukha daīn mukha daīn vīrī pyariju kai
Paī na calai kara uta rupa saraso na mai.
Saki jata caki jata chaki chaki jata lala sithala hvai
Jata gata bhauh bhanga hauna mai Srīḥ Srīḥ.
AthaViri divadiva anantar priya vadau ikaṭaka rijhi citaibo barnan:

Doha :

Mohana Ke draga matta ali ita uta kahũ na jāya
Rādhā ānana Kamala maī ikaṭaka rahe lubhāya

Jathā udāharana : Kavitta :

Sārīkī kinārī girī kāncana divāra vīca draga dvai subhāsara
Prafulla kaũ lasaũ bharae bhaũ haī madhupāvali
Siṅgāra latā alakamaī phabe haī karana phūl phūle chavisaũ
kharell

Nāsikā sirūkaī ḍhig lālā gula kyārī vālā
aruna adhara ranga cita vitakaũ hare
Rādhā mukha vāga vīca khañjan guyāl naīna bhūle
Āja cañcalatā ikaṭaka· hvai pare Śrīḥ

Rāga Vilāvala :

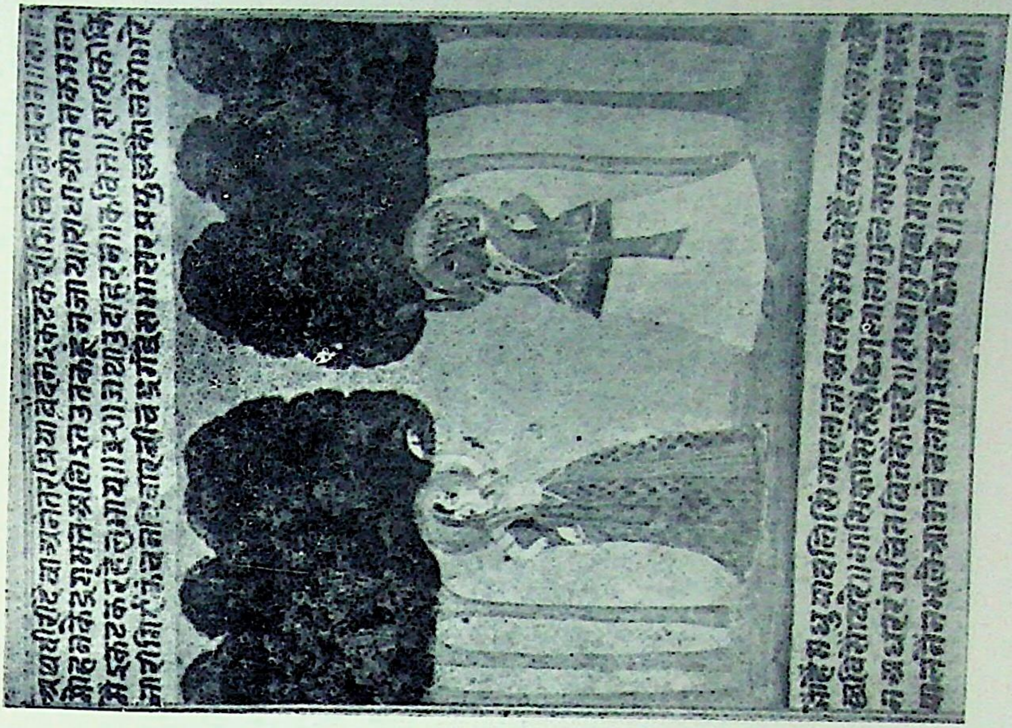
Alaka laḍīkaī tela cadhāvaī gāvaī mili vraja-nari ho ।
Sunata bi simaṭi savai juri āī lalitādika hitakāri ho ॥
Caukmaī cauk pūri motinkau caukī par vaiṭhārī ho ।
Telanake tyonār vividhi kari ubaṭinhavāya singarī ho ।
Sālū suraṅga vitān vanāyo gahi rahī rūpa ujyārī ho ।
Syāmā kara yaka vāna divāyo modaka goda suhari ho ॥
Mukha mara vaṭake sariki sajanı Srī-vrikhabhana duları ho।
Kṛṣṇadāsa giradharana chavīleki prānanahu taı pyarı ho ॥

Rāg Sūho :

Uvaṭanō maliye daliye malaru chuḍāiye ।
Jhura hito darajaṇa loga tinahi nahi bhāiye ॥

* * * * *

Ika canda pinyaũ dutihi dunyaũ alapa vaīs kumārīyaũ
Tere gāta-ki-kahā jāta varanaũ kanaka sācaı thāriyaũ
Kanaka Khambhanaga lāge. manahũ sācaī dhāriyā
Ati guna rūpanidhāna suvyāhana āiyā ।
Dhani dhanyabhāga suhāga Rādhe Krṣṇaso vara pāiyā ॥
Cira jiyo juga juga jorī mādho maṅgala gāiyā ॥





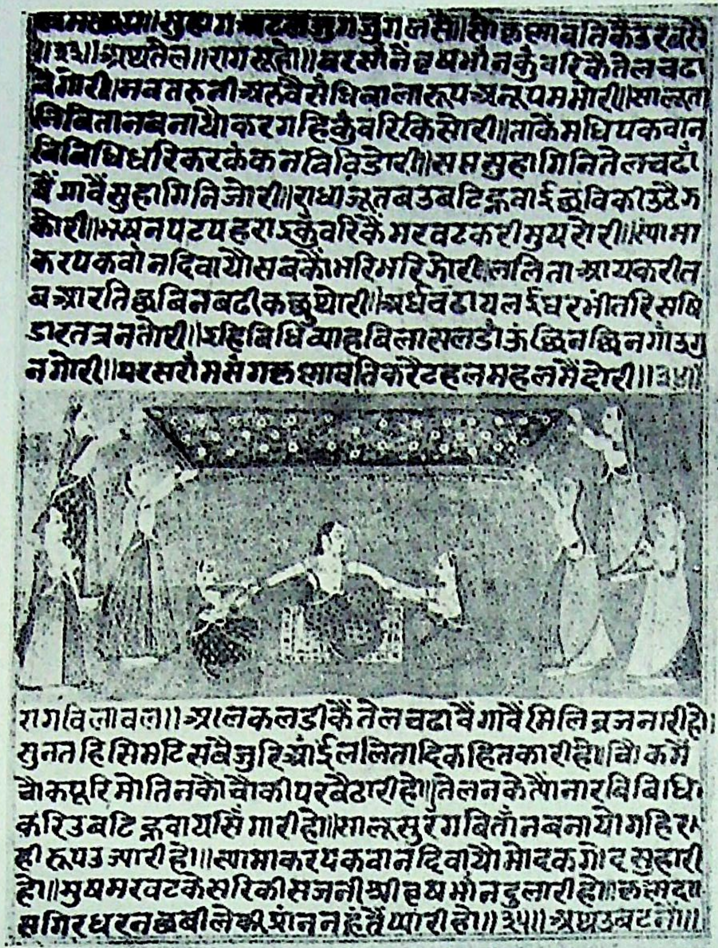


Fig. 3

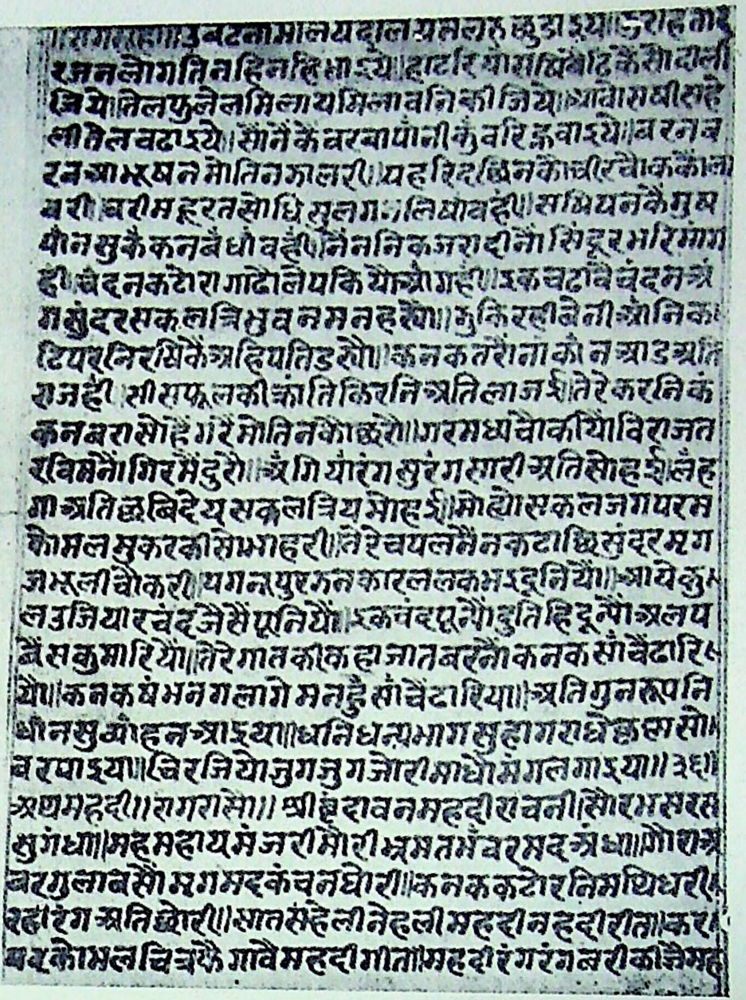


Fig. 4

MĀYĀMUKHYAKĀRIKĀ OF LAKṢMĪPATI

By K. Madhava Krishna Sarma

In the *Anūp Sanskrit Library* there is a work called *Māyāmukhyakārikā* by Lakṣmīpati. It consists of one hundred and nineteen stanzas on Māyā. In the colophon at the end the author describes himself as the Guru of Mahārāja Udyotacandra, the ruler of Kūrmācala. There is no further information regarding the author. The MS of the work is at least three centuries old. It is damaged and is full of gaps. At many places the metre is wrong and the reconstruction of the text is very difficult. The theory of Anantājara and Māyā profounded here is some what new to the classical Māyāvāda. In order that scholars interested in the various theories of Māyā may have an idea of the work, I give here an extract.

There is no mention of this in *Aufrecht's Catalogus Catalogorum* and other copies of it are not known.

मायामुख्यकारिका

नत्वा देवीं ...परमसुखकरां जन्तुभिः सर्वकालं
शश्व ...द्धरि द्रुहिणभवैः सेवितां सर्वभावैः।
मायामूर्ति सकलभवकरीं शुद्धसत्त्वस्वभावां
कुर्मः किंचिद्विचित्रं सुमतिसुगतये ज्ञानमार्गप्रकाशम् ॥१॥

अनन्ताजरमायाख्यः पदार्थः सर्वसंमतः।
यया विना न वै शक्ता वाघौ (?) सा सर्वकारिका ॥२॥

तावुभौ रथसंश्लिष्टचक्रवन्तौ स्वयं क्षमौ।
मायासंगतिमात्रेण कर्तारौ लोकसंमतौ ॥३॥

यथोभौ पुरुषौ नारीं विना किंचित्स्वशुक्लजम्।
न वै जनयतः सत्त्वं तथा तौ तां विना सदा ॥४॥

क्षेत्रं विना यथा बीजमशक्तमंकुरोद्गमे।
तथानन्ता जराख्यौ तौ विना मायां न कुर्वतः ॥५॥

मनसा प्रेरिते यद्वल्लोचने रूपग्राहके।
तद्वन्मायाप्रेरितौ तौ कारकौ न च केवलौ ॥६॥

मायां विना यदा शक्तौ स्यातां तौ तर्हि सर्वदा।
विना मायां प्रतिष्ठेतां यथा सूर्यं विना तमः ॥ ७७॥

रूपग्रहणसामर्थ्यं यथा वै चक्षुषः सदा।
तथा जननसामर्थ्यं नास्ति मायेतरस्य हि॥८॥

क्षितौ गन्धो जले शैत्यं शुक्लत्व दहने यथा।
कर्तृत्वं तद्वदेवास्ति मायायां नापरत्र हि॥९॥

अर्भको मातरं वत्सः सुरभिं सेवते यथा।
मायां सेवयतस्तद्वदनन्ताजरसंज्ञकौ ॥१०॥

माया माता समुद्दिष्टा जनकत्वेन हेतुना।
अनन्ताजरनामानौ वाश्रितौ तत्समाश्रि यत् ॥११॥

अकर्तारौ च मायायाः संबन्धात्कर्तृसंज्ञकौ।
तौ च चन्दनवृक्षस्य संपर्कादन्यवृक्षवत् ॥१२॥

कातरोऽपि यथा शूरो गण्यते शूरसंगतः।
मायासंगेन मायावद् गण्येते तावुभावपि ॥१३॥

यथा सुरसरित्स्वस्य संगादन्यां च निम्नगाम्।
स्वस्वरूपां करोत्येव तथा माया परानपि ॥१४॥

नारीपिण्डं समाश्रित्य यथा संतिष्ठतः कुचौ।
तथा मायां समाश्रित्य तावुभौ तिष्ठतः सदा ॥१५॥

नारीपिण्डात्पृथग्भूतौ यथा न स्रवतः पयः।
पयोधरौ विना मायां न च तौ कुर्वतः सदा ॥१६॥

नारीमुखाम्बुजे लग्ने लोचने भ्रमरोपमे।
पश्यतः सकलं वस्तु मायालग्नावुभौ तथा ॥१७॥

भृत्यौ राजाश्रितौ यद्वत्तथानन्ताजराभिधौ।
मायाश्रितौ नतां ..तिष्ठतः कुत्रचिन्न च ॥१८॥

यथा राजा स्वभृत्याभ्यां विना तिष्ठति न क्षणम्।
तद्वन्मायापि ताभ्यां तु विना नैव च तिष्ठति ॥१९॥

गुरुणा प्रेरितः शिष्यो यथागच्छति सत्वरम्।
तद्वन्मायाप्रेरितौ तौ कार्यं साधयतो ध्रुवम् ॥२०॥

इच्छा बुद्धिः क्रिया शक्तिभीविनाद्याः स्वभावतः।
मायामाश्रित्य तिष्ठन्ति जलमाश्रित्य शैत्यवत् ॥२१॥

क्रोधः सुखं तथा दुःखमीर्ष्या धर्मासहिष्णुता।
रागो द्वेषस्तथा तापोऽनन्तस्यैते गुणाः स्मृताः ॥२२॥

अद्रोहश्चाप्रपञ्चित्वं विभुत्वमजरे स्मृतम्।
यथाकाशो विभुः शब्दं जनयत्येव नश्वरम् ॥२३॥

तथैव किल किञ्चिदि मायासंगेनाजरः।
मृदुलं वन्हिसंबन्धात्कठिनं कनकं जसत् ॥२४॥

कर्तापि जायते नूनं मायायोगेन चाजरः।
स्नेहं विना यथा दीपो न वै ज्वलति कुत्रचित् ॥२५॥

TANTRIKA VIDYĀPATI

By Ramānātha Jha

In a recent issue of the *Journal of the Ganganatha Jha Research Institute*, Volume VI Part III for May 1949, Śrī Dinesha Chandra Bhattāchāryya of Chinsura has contributed a very learned and interesting paper in which he has described the rare find of a Tāntrika manuscript called *Āgama-dvaita-nirṇaya* which in its colophon states it to be the work of Mm. Vidyāpati Thākūra. He has also quoted a long extract from the *Bhaviṣya Purāṇa* discovered by him in a big Ms. now preserved in the Sanskrit College, Calcutta, in which there is narrated a very interesting account of a Maithila Vidyāpati and his family. The author of the *Āgama-dvaita-nirṇaya* refers in that work to his own सम्प्रदाय implying thereby that he belonged to a particular Tāntrika School of Mithilā and at two places he refers to the particular views of his own father. In the extract from the *Bhaviṣya Purāṇa*, Vidyāpati is described to have been born in the family of an Āgamabhūṣana who was initiated in the Vīra-cult of Tantra and that he himself attained Siddhi, perhaps in the same Vīra-cult.

Naturally, therefore, Śrī Bhattāchāryya takes these two Vidyāpatis, the author of the *Āgama-dvaita-nirṇaya* as well as the one described in the extract from the *Bhaviṣya Puraṇa*, to have been one and the same person, and then proceeds to identify them with the great poet and Jurist Vidyāpati. He has drawn conclusions from this about the religious persuasion of Vidyāpati and his family and has held the view that the great poet Vidyāpati was really a Śākta, a staunch Śākta at heart, belonging, perhaps, to the Vīra-cult of Tantra.

This conclusion was irresistible and would have added greatly to our knowledge of the great poet Vidyāpati and his beliefs, had it been proved beyond dispute that Vidyapati who wrote the *Agama-dvaita-nirṇaya* was the same person as has been described in the extract from the *Bhaviṣya Puraṇa* and that Vidyapati was the great poet and Jurist of Mithila who flourished during the days of the Oinbāra kings of Mithilā. But there is nothing to warrant such an assumption except the sameness of the name in all the three cases. Those who have made even a cursory study of Mithilā's geneologies, know it for certain that Vidyāpati has been a common name in Mithilā and there is hardly any family that has not produced one or more persons of this name. Living contemporaneously with our poet, in the courts of the same Oinbāra kings, and with the same distinctive surname of Thakura like the poet himself, there was another Vidyapati, belonging to the family of Nikutī of Kauśika gotra, who had one of his daughters married to Mahārāja Śiva Singh, the friend and patron of our poet, and another daughter married to his nephew and successor, Maharaja Dhīra Singh. Unless, therefore, there are other grounds to identify two persons of the same name, it is always hazardous to arrive at any conclusion merely on the similarity of names. These grounds may be various such as the age, parentage, place of residence etc. and in cases of Maithila Brāhmaṇas of the last seven hundred years, the names of the family to which they belonged.

In the present case, we know enough of Vidyāpati, the poet, to have any doubt about his age, parentage, or family. He belonged to the Saṇḍilya gotra of the Maithila Brāhmaṇas and his ancestors lived, since long, in the village of Bisapī which is a village some 15 miles west-south of Madhubani in the district of Darbhanga under the police-station of Benīpaṭṭī. When in the Śaka year 1248 the genealogies of all the Maithila Brāhmaṇas were collected

and consolidated which is known as Pañjīprabandha, this family came to be known by the name of its ancestral village Bisapī. About a hundred years after that, the poet was rewarded by his patron and friend Maharaja Śiva Singh with the grant of this very village which fact leads us to suppose that this was the native village of the poet also. This village is about 16 miles west-south of Mangaraunī, which is a suburb of Madhubanī, the headquarters of the Subdivision of that name, and not east of that village as described in the extract from the *Bhaviṣya Purāṇa*.

In the extract from the *Bhaviṣya Puraṇa* Vidyāpati[1] is described to have been born in the village of Ucita. This village name, I think, is spelt a little incorrectly. It should be Ucitī which is an important village under the police-station of Baherā, in the District of Darbhanga, more than 20 miles south east of Mangaraunī. This is a very old village and a family of Maithila Brāhmaṇas belonging to Vatsya-gotra traces its origin to this village, by which name this family is called. To this family of Ucitī belonged the

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* Geneological Table of Vidyāpati of the Uciti family:

उचिती-कुलसम्भूत

कान्हझा

प्रथम-प्रस्थिति | द्वितीय-प्रस्थिति

कन्या married to कुजौली कुलसंभूतसूपनझा

कन्या married to सन्मिश्रम०म० शंकर

पशुपति | हरपति प्रसिद्ध भनिझा

कन्या married to जगतीसंरुद्रमिश्र | विद्यापति

नोनेमिश्र

विवादचन्द्रकार म०म० मिसरूमिश्र | कन्या married to रसमंजरीकार भानुदत्त

poet Madhusudana whose work *Anyapadeśa-Śataka* is published in the 9th part of the *Kāvyamālā* series. From what has been described in the extract from the *Bhaviṣya Purāṇa*, it is obvious that this Vidyāpati belonged to this Uciti family. The members of this family have for their surname 'Jhā,' and not 'Ṭhākura'. It is thus clear that Vidyāpati described in the extract from the *Bhaviṣya Purāṇa* who belonged to the Uciti family of the Vatsya-gotra could not have been the poet Vidyāpati who belonged to the Bisapī family of the Saṇḍilya-gotra nor could he have been the same as the author of *Āgama-dvaita-nirṇaya* because the latter calls himself a *Thākura* while members of the *Uciti* family are all *Jhās* and not *Ṭhakuras*.

And in the *Uciti* family I have actually found a Vidyāpati who flourished approximately during the time described in the extract from the *Bhaviṣya Purāṇa*. He was the eldest son of Harapati who was popularly called Aṅgani Jhā. The father of this Harapati had two marriages and by the first he had an only daughter who was married to Sūpana Jhā of *Kujaulī* family, whose daughter was married to the great Śaṅkara Miśra who flourished during the last quarter of the 14th and the first quarter of the 15th century The elder brother of Harapati was Paśupati whose daughter was married to Rudra Miśra of *Jagatī* family, whose son was None Miśra. The eldest son of None was Mm. Misarū Miśra, the celebrated author of *Vivādacandra* and one of the daughters of None was married to *Kavirāja* Mm. Bhānudatta, the celebrated author of the *Rasamañjarī*. From this it is evident that this Vidyāpati was a contemporary, though a younger one, of Mm. Śaṅkara Miśra and was older than Mm. Misarū Miśra or *Kavirāja* Bhānudatta by one generation. He must have flourished, therefore, during the first half of the 15th century which is exactly what is meant in the extract from the *Bhaviṣya Purāṇa* where it is said that Vidyāpati was born after the expiry of 4,500 years of the *Kali* era.

There is, however, only one thing to remark in this connection. This Vidyāpati is mentioned without any distinctive title to describe him in the *Pañjīs*. It is claimed in the extract from the *Bhaviṣya Purāṇa* that he had attained *Siddhi* by virtue of which he was endowed with extraordinary powers of embellished speech in Sanskrit. In the *Pañjīs* Tāntrika Siddhas of Mithilā are generally distinguished by the title '*Gosāī*' but neither this Vidyāpati, son of Harapati, nor any one among his ancestors for about eight generations is appended with any title which may denote that he was a Siddha Tāntrika. Who was, then, the Āgamabhūṣaṇa in whose Gotra Vidyāpati is said to have been born in the extract from the *Bhaviṣya Purāṇa*? The *Pañjīs* do not offer any clue to this. The only explanation that I can think of for this silence on the part of the *Pañjīs* about the attainment of *Siddhi* by these great men of the *Ucitī* family is the great disfavour with which *Vīra cult* has been looked upon in Mithilā. There have been many people here, and some of them really very big men in every sense of the term, who have been initiated in the *Vīra cult* and followed *Vāmācāra* of the Tantra, but they all kept this a secret and never avowed this openly in society. Moreover, it is not claimed even the extract from the *Bhaviṣya Purāṇa* that Vidyāpati left any mark of scholarship behind him, so that in the *Pañjīs* he could have been honoured with any of those covetted titles that usually go with the names of great scholars. Whatever may be the reason, this silence about the attainments of Vidyāpati and his remote ancestor *Āgamabhūṣaṇa* in the *Panjīs* casts a shadow of doubt about the accuracy of the identity of Vidyāpati proposed by us, but about this there can be no doubt whatsoever that this Vidyāpati who has been described in the extract from the *Bhaviṣya Purāṇa* as belonging to the family of *Ucitī* could not have been the same person as the poet Vidyāpati or even as the author of *Āgama-dvaita-nirṇaya*.

About the identification of the author of the *Āgama-dvaita-nirṇaya* also with the poet Vidyāpati, I have grave doubts. Both of them are *Mahamahopadhyayas* and Ṭhākuras; still I do not think that this alone is sufficient to justify the identification. The author of the *Agama-dvaita-nirṇaya* refers to his own *Sampradāya* and to the particular views of his own father. Nowhere else in his many works has Vidyāpati, the poet, made any reference to his own *Sampradāya* or to the views of his father or any one else among his ancestors. It is, indeed, a fact worth noting that Vidyāpati, the poet, has made no mention of his father or any one among his illustrious ancestors anywhere in his works and even in the *Puruṣaparīkṣā* where there are many anecdotes about his ancestors, the poet is completely silent about his own relationship with them. In this *Āgama-dvaita-nirṇaya*, the poet would suddenly change his general style of exposition and make reference to his own *Sampradāya* and to the views of his father seems not quite probable. We do not know, independently of this reference, that there was any particular *Sampradāya* of the poet nor do we know of any *Tāntrika* work of his father. The title of the work *Dvaitanirṇaya* has come into vogue only with Vācaspati Miśra, the jurist, and there is no *Dvaita nirṇaya* prior to him though after him this has become a common title of works on *Dharma-Sāstra* and even other subjects. All these considerations have led me to doubt the identification of the author of *Āgama-dvaita-nirṇāya* with the poet Vidyāpati.

There was, however, another Vidyāpati who was a *Mahāmahopadhyaya* and was called a *Thakura*. He came about a century later than the poet Vidyapati and actually belonged to a family of *Tantrikas* which fact the members of that family avowed with great pride. His father was a renowned *Tāntrika* and wrote works on the subject which are held in great esteem. This Mm. Vidyāpati Ṭhākura was the second son of Mm. Govinda Thākura of the *Ghosauta*

family belonging to *Vatsya-gotra*. He had eight sons all of whom were renowned scholars and are styled *Mahāmahopādhyāyas* in the Pañjīs. Two of the sons of Govinda are well-known to all students of Sanskrit learning and they were his fifth son *Agamacarya Tarkapañcanana* Devanatha the author of the many *Kaumudīs* on *Tantra*, *Mantra*, *Smṛti*, *Mīmaṁsa* etc. and his seventh son Mm. Madhusudana who wrote the many *Kaṇṭakoddharas* on *Nyaya* and *Smṛti* also. Devanatba in his *Mantra-Kaumudī* eulogises his family in very glowing terms and describes four of his ancestors beginning with his great-great-grand-father, Ravikara, whom he calls सकलागमज्ञः. His father Govinda he calls सकलतन्त्रसरोजसूर्यः.. This Govinda is the celebrated author of the *Kavya-Pradīpa* on the *Kayaprakāśa* and *Puja-Pradīpa*, a work on the Tāntrika mode of worship. Some of the works of Devanatha and Madhusudana transcribed in the year 400 of Lakṣmaṇa Sen Era are available to me. Ravikara who was the great-grand-father of Govinda was the son of the daughter (दौहित्र) of *Mahavartika Naibandhika* Dhīreshwara who was the uncle of the great jurist Caṇḍeśvara author of the *Ratnākaras* and the great-grand-father of Vidyāpati, the poet. Govinda was. therefore, one generation younger than Vidyāpati, the poet, and his son the *Tāntrika* Vidyāpati who is, perhaps, the author of *Agama-dvaita-nirṇaya* must have flourished, therefore, during the second half of the 15th century. The descendants of the second son of Govinda, namely, Mm. Vidyāpati, are scattered all over Mithilā and persons ninth and tenth in descent from him are flourishing at present. It may be interesting to note here that the descendants of his elder brother, that is, the eldest son of Govinda who was Mm. Laksmīnātha Thākura, are permanently settled in the village of Bodhagrāma in the district of Dīnajpur in East Bengal now.

I have been led to identify the author of the *Āgama-dvaita-nirṇaya* with the second son of Govinda Thākura

by the fact that in the second introductory verse in the *Agama-dvaita-nirṇaya*, Vidyāpati salutes Govinda which I interpret to mean his father. He has saluted the *Divine Power* (ऐशं महः) and invoked its blessings in the opening verse and in the following verse नत्वा गोविन्दचरणौ would yield a poor meaning if by Govinda only *Lord Viṣṇu* were meant. All the sons of Govinda Ṭhākura salute their father in the beginning of their works and it gives a more reasonable sense therefore to hold that the author of *Āgama-dvaita-nirṇaya* has done the same though by श्लेष salutation may be offered to Lord Viṣṇu also. This assumption can even be verified. If we have "the particular views of his father" which he has twice referred to in his *Āgama-dvaita-nirṇaya*, we can see if these views have been held by his father in his *Pujā-Pradīpa* and by means of this verification we can arrive at a conclusion which can have no shadow of doubt about its validity. Till those passages are available, I leave all these facts to the judgment of discerning scholars. They may see for themselves if the identification suggested by me is not more plausible than the one adopted by Śri Bhattacharya.

As regards the religious persuasion of Vidyāpati, the poet, I do not see any reason to doubt the authenticity of the tradition that he was an *Upāsaka* of *Pañca-devatā* like every other Smārta Maithila. If he was specially devoted to any *Devatā* that might be called his *iṣṭa-devatā* it was *Śiva*. It is true that the great jurist Caṇḍeśvara has in his *Kṛtyacintāmaṇi* described his grand-father Devāditya as मन्त्रप्रभावाहतप्रत्यर्थिक्षितिनायकान्धतमसः and चक्रद्विजानां प्रियः which mean that "he was possessed of extraordinary powers given to him by the *Siddhi* of *Mantra* by dint of which he could dispel the blinding darkness caused by the enemy kings" and that "he was a favourite of the *Dvija* sitting in a *Cakra*". This *Cakra* is a term used for a secret conference of people following the *Vāmācara*. From this

it is obvious that Devāditya was an adept in Mantra-Siddhi and was a patron of *Tāntrika* of the *Vīra-cult*, if he was not a V*īra* himself. But save this little reference to the religious persuasion of a remote ancestor of the poet, there is absolutely nothing to show that either the poet himself or any one among his ancestors followed the Tāntrika way of life and that of the *Vīra-cult*. He might have been an अन्तःशाक्त but there is no evidence to show this and unless more conclusive proofs are available I do not think it reasonable to hold him anything except a devout Śaiva which he has been taken to be, not without reasons, for the last five hundred years or more.

REVIEWS OF BOOKS

YEAR'S WORK IN MODERN INDIAN LANGUAGE STUDIES*

BENGALI AFTER 1948

By AMAR MUKERJI

BANGLAR CHOTOGALPA—Samkshipta Alochana: by Narendranath Chakravarty; Modern Book Agency, Calcutta.

The short-story is one of the most practised literary forms in Bengal, and yet it has not received any serious critical consideration apart from the novel, as in Sri Kumar Banerji's Banglā Sāhitye Upanyāser Dhārā. Prof. Chakravarty's present volume makes up the deficiency inasmuch as it seeks to survey the development of the Bengali short-story as an independent unit. Starting with the first Bengali story which he says is *Madhumatī*, Prof. Chakravarty gives a detailed, though incomplete list of the story writers of Bengal; and if his analysis of the trend and the worth of the stories is uneven in emphasis and rambling in nature sometimes, that is perhaps due to his inability to apply to the stories he studies, the standards he had set for himself in the 1st chapter of the book. His survey also suffers from grave omissions, like that of the stories mentioned in *Kalloljug* or those contained in *Tin Sangi*, and he has made no mention of the large number of Bengali stories which are translations from, or adaptations of European stories. Prof. Chakravarty 's casual inclusion of a discussion of the other works of these story-writers is quite often beside the point and so not agreeable with the general plan of the book.

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* We propose to publish under this head a crictial review of high class publications in Modern Indian languages—Editor.

It must, however, be accepted that the present volume contains enough material that has been rescued from the oblivion of the now defunct journals, and so would serve as source-book to the future chronicler.

KALLOL JUG—by Achintyakumar Sengupta; D.M. Library, Calcutta.

Here is a remarkably well-written account of the ideals and ambitions of a band of young, enthusiastic writers who once gathered round the famous monthly *Kallol* with the explicit purpose of revolutionising the entire literary approch of the day. Dineshranjan Das and Gokul Nag were the leaders and around them clustered a group of writers which included Sailajananda, Premendra, Nazrul, Mohitlal, Buddhadev Bose and a host of others including the author of the book himself. Like the *Yellow Book* of the 90's, the *Kallol* enshrined a literary ideal but was not as blase and decaying as the *Yellow Book*. So the literary influence that the *Kallol* and its worthy successor *Kali Kalam* and *Uttara* exercised was extensive enough to demand the attention of Tagore, who did not resist its ideals, as many people wrongly understand.

In any case, the *Kallol* prospered for several years and most of the Bengali poets, novelists and dramatists who are important today can trace their literary genesis to it. Of this magnificent source of inspiration, Shri A. Sengupta has given us such a penetrating and stimulating account that the book, besides being extremely readable, well contains a story that will be immensely helpful to the future historian of Bengali literature. Here he will find a sympathetic, though incisive, analysis of the literary faith and training of authors who are famous today. The book will give an idea of the new age and its outlook.

BANGLA NATAKER UTPATTI O KRAMAVIKASH—by Manmatha Mohan Bose, A Calcutta University Publication.

The present volume is not, as the author admits in his preface, a regular history of the Bengali drama, but rather the story of the development of the Bengali drama as an art-form. Consequently the book does not include an exhaustive treatment of all Bengali dramatists, though one does feel that the learned author's refusal to include a more detailed study of the *gītināṭya* and of the post-Tagorean dramatists within his survey has made the book incomplete. The tendencies which the last twenty years of dramatic writing reveal do form a part of the evolution of Bengal's dramatic technique.

The most significant part of the book, however, is its 3rd chapter where the author, after surveying the beginning of the drama as a whole, traces the origin of the Bengali drama to the *palagan*, *gambhira utshav*, *gajan* and *surya puja*. Mr. Bose's analysis of these in relation to the later *yatras* and *panchalies* is very much contrary to theories built up by Ridgeway or Keith, or so far as the Bengali drama is concerned, by S. K. De, Guhathakurta or Ghosh. The study of *Shiva utshav* provides us with the secret to the technique of the indigenous Bengali drama which underwent a rapid change under the western influence. Of this period beginning from 1796, Mr. Bose gives a rather cursory account, though his attempt to relate the drama to the stage is praiseworthy. It is a pity that so far as Tagore's plays are concerned, Mr. Bose has been content with repeating Thompson's standpoint, while once Tagore's plays were related to our folk-plays, they would have surely revealed new meanings. Beyond this, Mr. Bose's enquiry into the competition that the Bengali drama has to face from the film is interesting and worth noting by all our dramatic critics.

NĀṬYA SĀHITYER ALOCHANA O NATAK VICHAR, Vols. 1 and 2: by Sadhan Kumar Bhattacharya; Punthighar, Cornwallis Street, Calcutta.

The two volumes of this book, starting with a brief discussion of the accepted tenets of the dramatic art, proceed to analyse some of the prevalent theories of tragedy, and then give a resumé of the history of the Bengali drama, against the background of which is examined, rather too minutely sometimes, such significant plays as *Chandragupta*, *Sahjahan*, *Pratapaditya*, *Alamgir*, *Prafulla*, *Raktakarabi*, *Raja O Rani*, *Sankaracharya and Bhisma*.

Among the more original conclusions arrived at are that the decay of the Bengali drama is not entirely due to the Muslim influence, and that the charge of the Bengali dramas, being essentially melodramatic does not mean that Bengal has no tragedy. Beyond this, it is significant that Mr. Bhattacharya has given some critical attention to the neglected Kshirodprasad, and that the greatness of *Prafulla* as a play has been maintained. On the other hand, the volumes suffer as they do not give any consideration to any of the Bengali comedies and farces or to some such interesting dramatic types as the dance-dramas and the season-plays of Tagore. The main shortcoming of Mr. Bhattacharya's study is that it has vacillated between a text book and a learned treatise.

RABINDRANATYA PRABAHA, vol. 1 by Pramathanath Bisi : A. Mukerjee and Co., College Square, Calcutta.

The book cannot be taken as a systematically connected study of all the plays of Tagore, though here for the first time, one finds an attempt to relate Tagore's plays to his central philosophy of life. From this point of view, Mr. Bisi's preface is a very suggestive statement ; the more so because he tries to hint at the fact that Tagorean comedy must also be related to the poet's basic view of life.

But unfortunaterly enough Mr. Bisi's analysis of Tagore's plays does not always, except in the case of *Mālinī*, reveal this awareness of the fundamental stand-point. The result is that a major portion of the book deals with the problems of theme, plot and construction of Tagore's plays, seeing them also from the standpoint of the working of the cycle of seasons. This last mentioned study has been done with special care as has been Mr. Bisi's search for the reason, and into the method, of the several rewritten versions of Tagore's plays. It is here that the book covers new ground, leading ultimately to a much fuller understanding of the nature of the creative process behind the dance-dramas. When these are supplemented to the author's two-volume *Rabindrakāvya Prabāha* and *Rabindrakāvya Nirjhar* we get a fairly comprehensive picture of Tagore—the creative artist.

RABINDRA-SAHITYE HĀSYARASA—by Sarojkumar Bose; Hindusthan Book Depot, Bankim Chatterji Street, Calcutta.

Contray to what most people wrongly think, the entire works of Rabindranath Tagore bristle with such varied specimens of wit and humour that Mr. Bose's attempt to present these in a planned manner is indeed welcome. While doing this he has not given any critical consideration to Rabindranath's numerous statements on the nature, variety and source of the risible, thereby jeopardising the fundamental outlook of the present book. What the author has done instead is to divide Tagore's comic writings into three broad categories *vyanga*, *kouīuk* and *Khapchaḍa rachana* and then to illustrate these by quotations. Such a method can only be useful upto a point in so far as it can acquaint us with Tagore's devices of creating laughter—puns, malapropisms, parody etc. Mr. Bose's concluding

chapter tries to reply to some of the charges made by critics like Dr. Sen Gupta who say with reference to Tagore that a lyric poet cannot be a comic artist.

PRAKRITIR KABI RABINDRANATH—by Amiyakumar Sen; Viswa Bharati, Calcutta.

Here in this book the nature poetry of Tagore has been closely studied both with reference to the idea of Nature in Bengali poetry which went before Tagore and the English Romantic poetry, though the points of comparison have not been always taken to the fundamental concept of Nature as it first appeared in the Hindu mythology, so far as Bengali poetry is concerned, and certain schools of English metaphysical thought as in English Romantic poetry. Once this absence is admitted, Mr. Sen's book cannot but be a rather one-sided approach to Tagore's idea of Nature, even though the book contains a systemmatic survey of the development of Rabindranath's concepts of Nature as reflected in his poetry. His each book of poems is taken up one after another and the ideas of Jivandebata, Prakriti and Purush, and the Rudra have all been analysed in their proper context. A brief consideration of the position of Man in Nature has not been omitted and the symbolism of the cycle of seasons has also been touched upon. So, as a first book on Tagore's Nature-poetry the present volume will surely be useful, though a more concentrated study of Tagore's natural symbolism and imageries in relation to his basic view of life as stated in the Religion of Man and The Creative Unity is urgently called for.

REVIEWS OF BOOKS

DESCRIPTIVE CATALOGUE OF THE PĀLI MANUSCRIPTS IN THE ADYAR LIBRARY,.—by Dr. E. W. Adhikaram, M.A., Ph.D. (Lond.). Pages xxxi + 111. Price Rs. 6. 1947.

The book under review has been published in the Adyar Library Series as No. 61. Importance of a Descriptive Manuscript Catalogue can never be too much exaggerated . It is pity that no proper organization, either private or Government, exists these days for collecting information about manuscripts scattered all over the country. We know how rich our country is in manuscripts. But due to cultural degeneration and rapidly changing economic and social conditons, we are losing these valuable treasures every day. It is very essential that searches be made in these manuscripts, efforts should be made for their safe collection and preservation and descriptive catalogues be published on scientific lines.

What we understand by a Descriptive catalogue is that it should not only consist of merely what is found in the beginning and at the end of each manuscript, but should also give a more important details of the contents of the Manuscripts. This is possible only when the compiler of such a catalogue reads line by line of the Ms. and notes the points to publish in the catalogue; otherwise, the catalogue fails to give any idea about the importance of the work.

Though the Pāli texts have been published in the past in Roman script, yet the Mss. are not written in that script. For the convenience of readers, I think it is desirable, particulaly in Independent India, to publish these in Devanagari script.

The book under review deals with Mss mostly written in Simhalese script. The compiler gives more important details about these Mss. which have added to the value of the edition.

HARIÇARITA BY PARAMEŚVARARA BHAṬṬA—Edited by Pandit V. Krishanamacharya, special editor, Adyar Library. The Adyar Library series No. 63. Pages liv +86. Price Rs. 5. 1948.

The book under review had already appeared in the *Adyar Library Bulletin* from May 1947 on words. It is based on a single Palm-leaf manuscript written in Malayan script.

Parameśvara hails from Malabar and is the author of a commentary called *Sumano-ramaṇī* on the *Megha-Sandeśa* of Kālidāsa, and *Svaditaṅkaraṇī* on the *Nyāyakaṇikā* of Vācaspati Mishra's Mīmāṁsā work. He is a well-known Mīmāṁsaka of the Kumārila school and has written several works on it.

Haricarita is a very interesting Kāvya dealing with the story of Kṛṣṇa. The peculiarity of this work is that each of its verses consists of an Astronomical vākya current in Malabar at his time. There are about 248 such Vākyas in this poem of 253 verses. These Vākyas are used in determining the position of the moon day after day. It was because of this that the book was mistaken for sometime as an astronomical work.

Pandit Krishnamacharya has added a running Sanskrit commentary on the work which has added to its value. The work has been made very useful with the addition of an Introduction and profuse notes. The Adyar Library deserves our congratulations for bringing into light such a work in book-form for the first time.

ANNUAL BIBLIOGRAPHY OF INDIAN ARCHAEOLOGY.—(Vol. XV) For the years 1940-1947. Published with the aid of the Government of Indonesia, the Government of India and the Government of Ceylon by the Kern Institute, Leyden, Holland 1950. Price not mnetioned.

This is the latest volume in the well-known series of the Annual Bibliography of Indian Archaeology. The special contributions in the present volume are those on India by J. H. Kramers (Peshawar); C. Kern (Indus valley Painted Pottery); H. Goetz (Archaeology in Bikaner); and A. S. Altekar (Indian numismatics 1940-46). On Ceylon by Paranavitana (Recent discoveries at the Ruvanvali Dagaba Anuradhapura); on further India G. Goedes and L. Malleret; and on Indonesia by A. J. B. Kempers. Then follows the usual classified material on Archaeology in India, Ceylon, Further India, Indonesia and Adjoining territories including commemorative and obituary notices. The total number of entries is 2580 selected and arranged by Prof. P. H. Pott, conservator of the Kern Institute.

It is gratifying to note that after the forced silence during the Second World War scholarly publications are again getting available. It is needless to point out that the publication of the bibliography under review is very necessary for the student as well as the scholar. It is not only a reference work but also a work which brings together all available work done during a period and thus provides a picture of what has been achieved and what remains to be done. The work is a model of European scholarship on Indian subjects and we earnestly hope that it will be used by all those interested in Indian archaeology, and will be at once an inspiration and guide to them.

The printing has been done in a way worthy of the reputation of the firm E. J. Brill Ltd. Leyden.

HARIHARASUBHĀṢITA (OR MM. HARIHARA'S SŪKTI-MUKTĀVALĪ).—Edited by Pt. Ramanatha Jha, Librarian, Raj Darbhanga. With a Foreword by Dr. Amaranātha Jha. Published by The Newspapers and Publications, Ltd., Patna. 1949. Pages iii+48+81+28. Price Not mentioned.

This is a collection of about 627 sanskrit verses by Mahāmahopādhyāya Harihara Jha, a Maithila scholar of village Biṭṭho in district Darbhanga. He flourished in the 17th century A. C. The present book is a unique kind of Subhāṣitasaṅgraha inasmuch as the entire work is by one and the same poet and there is an inherent unity underlying the whole of it. It appears that the work was planned to serve as a practical guide to the Paṇḍitas; for every period of his life from infancy up to his old age instructions have been offered in such a manner as to make him successful in life. "The greater portion of the book deals with the journeyings of the Pandita in search of a liberal patron and the various ways of pleasing him." In those days it was quite common for Maithila Paṇḍitas to go out in search of foreign liberal courts in order to win laurels in Śāstrārthas and to come back loaded with wealth. The most obvious and the most illustrious examples of this fact are the renowned philosopher MM. Mahesha Ṭhākura who went to Khāndwā (in Madhya Pradesha) and later to the court of Emperor Akbar and won the kingdom of Mithilā which continues to be in some form in the hands of his descendent the present Mahārājādhirāja Sir Kāmeshwara Singha Bahādur of Darbhanga; and MM. Sachala Mishra who established his scholarly supremacy in the court of the then Peshwa and was carried on the palanquin by him personally in recognition of this fact.

In the long and informative introduction to the book, the editor has given a vivid account of the social conditions

in Mithilā under which the earlier ideal of puritanic indifference to wealth was giving place to lure for wealth. He has also thrown considerable light on the ancestry and date and the works of the author. He has shown some of the poetical excellences of the verses, and a brief notice of the identifiable proper names occurring in the text. It would have been more useful if all those proper names which occur here had been listed at one place for future reference.

The publication of this work adds remarkably to our knowledge of Mithilā's learning during the medieval age. As. Dr. Amaranatha Jha observes in his valuable foreword, "it was a common custom for every young student in India until quite recent times to maintain a commonplace Book—a *Subhaṣitasaṅgraha*, if he read Sanskrit, or a *Beyaz*, if he was interested in Persian. Whenever, in course of his reading or in conversation with his elders, he came across a verse that caught his fancy, he said to himself like Hamlet, "Meet it is I set it down," and he wrote it in his book and remembered it and used it not only as an elegant appendage to conversation or writing, but also as a part of education to instruct, inspire and elevate him." It is regretted that only a few such *Subhāṣitasaṅgrahas* of Mithilā have been published so far—the *Āryāsaptaśatī* of Govardhana, *Vidyākarasāhasrakam*, Śaṅkara Miśra's *Rasārṇava*, Bhānudatta's *Cittarasamañjarī*, etc. A large number have remained unpublished. We congratulate the editor for having published the present *Subhāṣitāvalī*. Such books are not only historically important but are also pleasure-giving in themselves.

Prāchīna Bhārata kā Itihāsa.—By Bhagawatasharana Upādhyāya, History of Ancient India up to 1200 A. D. in Hindi. Along with a foreword by Acharya Narendradeva. Published by Granthamālā Kāryālaya, Patna. Pages x + 386 + xxxv. Price Rs. 10 1949.

This book claims to be the second text book in Hindi on its subject which is written in a scientific, sober and objective manner for the undergraduate and the postgraduate students. The usefulness of the book is enhanced by a good index and important appendices. There is no pretence at originality but the treatment is on the whole simple, direct and in some ways conducive to independent thinking. Due emphasis has been given to cultural history along with the political history. Most of the newer researches have been incorporated but evidently quite a many details have either been missed or purposely eschewed from the book; such unnecassary items as the very long appendix on Kālidāsa's date need to be curtailed. The bibliographies appended to the chapters are, however, quite incomplete. We hope these defects would be rectified in the next edition. Meanwhile, we recommend this book to all those who wish to read in Hindi a fairly comprehensive and cautious account of Indian history up to 1200 A. D.

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A HISTORY OF MAITHILI LITERATURE.—Vol. II. (Modern Period) by Dr. Jayakanta Mishra, M.A. D. Phil., Lecturer, Allahabad University. With an Introduction by Professor Priyaranjan Sen of the Calcutta Universiry. Published by Tirabhukti Publications, 1 Sir P. C. Banerji Road, Allahabad, 1950. Price Rs. 7-8 pp. 187.

In this volume the learned author not only completes his pioneer work but gives informative Appendices and Indexes which will be found useful to the readers. With remarkable care and industry he has tried to collect all the available material and bring it up-to-date. He has dealt with Prose, Poetry and Drama in separate chapters and illustrated many of his observations by quotations from books themselves. That presents before us the stages by which the different branches of Maithili literature have developed and makes the book an interesting reading.

I have however noticed some factual inaccuracies in the first chapter of the book entitled "Channels of English Influence". On pages 9 and 10 where he mentions about the Maithila Printing Works at Madhubani, it is not correct to say that it was established by Pandit Ramanand Thakur with the help of the Banaili Raj. Pandit Ramanand Thakur was merely the Manager of the Press. It was established by my uncle (Raja) Kalikanand Singh of Srinagar. Similarly, the Maithili chair in the Calcutta University was founded jointly by Raja Kirtyanand Singh Bahadur of Banaili and (Raja) Kalikanand Singh of Srinagar and it was called Banaili-Srinagar Maithili Chair. I trust the book will soon have its second edition from which these and other inaccuracies, if there be any more, will be removed.

—Gangananda Singh.

OBITUARY

We learnt with very great remorse the sad demise of Dr. D. R. Bhandarkar of Calcutta. Son of the illustrious Maharashtra scholar Sir R. G. Bhandarkar, he received his education in Poona and had a distinguished career in the University of Bombay. He was associated as a Lecturer in Ancient Indian History and Culture in various Indian Universities—Bombay 1903, Benares 1925, Madras 1938-39 and Calcutta 1917-35. He was an honorary member of several learned Research bodies, the Archaeological Department of the Government of India, the Indian Historical Records Commission, Indian Museum, Calcutta, Royal Asiatic Sociey of Bengal, and the Ganganatha Jha Research Institute. He was elected the president of the Indian History Congress in 1938. His contributions to Indian scholarship were varied and extended over a period of about forty years. His works like the *Carmichael Lectures*, *Ashoka*, *Some Aspects of ancient Hindu Polity*, *Origin of the Shaka Era*, *Foreign Elements in the Hindu Population* and *Reports of the Western Section of the Archaeological Survey of* India are widely read and used as texts. At the time of his death he was engaged in bringing out the second edition of his monumental work *Corpus Inscription Indicarum* Vol. III. He was a regular contributor to almost all the leading Indological journals in India and abroad.

We the members of the Ganganatha Jha Research Institute have particular reasons to cherish his memory. He was one of the original signatories to the appeal for founding it. Subsequently he always took a keen interest in its work. He took pains while he was leading a retired life even at the risk of his health to contribute to its *Journal* valuable notes and articles. He was one of its Honorary Members. We shall miss him deeply. We pray to God that his soul may rest in peace.